THE

# AMERICAN JOURNAL

OF THE

# MEDICAL SCIENCES.

EDITED BY

ISAAC HAYS, M.D.,

FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA; MEMBER OF
THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, AND OF THE AMERICAN
PHILOSOPHICAL SOCIETY; ASSOCIATE FELLOW OF THE AMERICAN
ACADEMY OF ARTS AND SCIENCES,
&c. &c. &c.

ASSISTED BY

I. MINIS HAYS, M.D.

NEW SERIES.

VOL. LXIV.

PROSUNT QUAE OMNIBUS.

98426

PHILADELPHIA:
HENRY C. LEA.
1872.

R
11
A5
n.s.
v.64
cop.2

---

Entered according to the Act of Congress, in the year 1872, by
HENRY C. LEA,
in the Office of the Librarian of Congress. All rights reserved.

---

PHILADELPHIA:
COLLINS, PRINTER.

THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR JULY 1872.

---

## Art. I.—*On "Carbolic Acid," its Composition, Properties, Uses in Surgery and as an Internal Remedy.* By J. H. Bill, M.D., Surgeon U. S. Army.

Attention was first called to carbolic acid, as a remedy in medicine, by Lemaire, in 1860,[1] and more fully in 1863, in a work which reached a second edition in 1865.[2]

Lister, in 1866, apparently without knowledge of Lemaire's labours, commenced a course of untiring clinical experimentation, which he has continued to this day, founding what he calls the antiseptic system. His first results were announced in the *Lancet* in the spring of 1867.[3]

Recently, A. E. Sansom, M.D., Lond., has published a work on the "Antiseptic System," treating of carbolic acid as an antiseptic.[4]

Dr. Angus Smith has also published a work on "Disinfectants,"[5] to which we wish to acknowledge our indebtedness for many facts. The three authors first named unite in the effort to make carbolic acid chaperon the germ theory of disease. We think this endeavour is the cause of that opposition which Lister's practice has encountered from certain of his contemporaries, an opposition founded on prejudice, and almost passing into strife.

Until a very recent period, the chemistry of this body had been imperfectly known, even to chemists. This also has restricted its use in medicine. We know of a paper which appeared not long ago in a prominent chemical journal, in which the writer—a chemist—recommends carbolic acid as a styptic, asserting that, as all *acids* are styptics, carbolic acid must be a styptic—an extreme case to be sure, but showing that a body shrouded in mystery is liable to become the subject of marvellous tales. It has been in pretty general use for the past five or six years, although we think, in a rather hap-hazard way, with no design besides the benefiting a wound, and no belief in any property beyond a mysterious entrophy. Can we doubt that it has been the scapegoat of much unmerited blame, possibly of undeserved praise?

---

[1] Moniteur des Scs. Méd., 1860. Moniteur Scientifique, Oct. 1862.

[2] De l'Acide Phénique de son action, sur les vegetaux, les animaux, les ferments, les renius, etc. etc., par le Docteur Jules Lemaire, 2d edition, Paris, 1865.

[3] Lancet, March, 1867; July, 1867; February, 1868; June, 1869.

[4] The Antiseptic System; a Treatise on Carbolic Acid and its Compounds, by Arthur Ernest Sansom, M.D. Lond. London, 1871.

[5] Disinfectants and Disinfection, by Angus Smith, M.D. Edinburgh, 1869.

On the whole, the reports are in its favour, and it is gradually but surely gaining the favour of the profession, especially as a local application.

Before discussing the physiological or therapeutical bearing of the subject, let us pass in review the chemistry of carbol, as we beg leave to call it, and for which we hope presently to show a good reason.

Carbol was discovered in 1834, by Runge.[1] As it seemed to form salts with bases, he called it carbolic acid. Laurent[2] first obtained it pure, calling it phenylic hydrate. Gerhardt[3] subsequently proposed the name phenol, and Berthelot[4] extended this designation to the class of which carbol is a member. Carbol was long confounded with creasote (wood-tar oil), which is an uncertain mixture or solution of carbol, cressol, creasol, veratrol, etc., with several ethers, etc. The chemistry of carbol has been particularly elucidated by the labours of Cahours,[5] Hlasiwetz,[6] Hoffman,[7] Canizzaro,[8] Fittig and Tolens,[9] Calvert,[10] Kolbe and Lauterman,[11] and Kekulé [12]

Carbol crystallizes in needles of 1.066 sp. gr., melting at 34° C., boiling at 184° C., dissolving in twenty parts of water at 20° C., and in all proportions in alcohols, ethers, oils, etc. When heated and ignited, it burns with a yellow flame. In dilute solution, its taste is sweet, and excessively impressive. Whilst its odour in dry air is feeble and not fugitive, in moist air the odour is strong and evanescent. The crystals are soluble in twenty parts of water, remaining liquid at 20° C.

---

[1] Poggendorf's Annalen, xxxi., xxxii.

[2] Annal. Chemie und Pharmac., xliii., xlviii.

[3] Annal. Chemie und Pharmac., xlv.

[4] Chemie Organique, i. p. 466.

[5] Annal. der Chemie und Pharmac., lxxiv., lxxvii., lxix., xli.

[6] Annal. der Chemie und Pharmac., cx., cxxxix.

[7] Annal. der Chemie und Pharmac., lxxvi., ciii.

[8] Annal. der Chemie und Pharmac., xc.

[9] Annal. der Chemie und Pharmac., cxxxi., cxxxiii.

[10] Quarterly Journal Chem. Society, xviii. 66.

[11] Jahresbericht, 1869–1870.

[12] Lehrbuch der Organischen Chemie, vol. ii. p. 521 to vol. iii. p. 250, the latest and best account of carbol and the aromatic series.

The formula of carbol is $C_6H_5,OH$.[1]

We know of no body with which carbol unites without change, a change so far as we know confined to a loss of its hydrogen or oxygen, and a replacement of these atom for atom by some other body. This exchange results in the formation of two classes of compounds, according as the hydrogen of the water residue OH, or as the hydrogen of the carbon nucleus $C_6H_5$, is substituted.

As a rule, the compounds formed by substitutions occurring in the water residue OH are unstable, carbol being easily reproduced from them, in some cases by physical means alone. When carbol and potassium react, we have an instance of the substitution of the hydrogen of the water residue by potassium. Thus $C_6H_5,OH+K$ becomes $C_6H_5OK+H$. This compound is very unstable, even carbonic acid will break it up. In the same way might have been substituted an alcohol radical; thus a body resembling an acid ether (*e. g.*, acetic ether) would have arisen. This hydrogen can also be replaced by the mineral acids, such as phosphoric—carbol—phosphoric acid arising. But all of these psuedo-salts, ethers, acids, etc., are unstable. The oxygen of the water residue is replaceable by sulphur, and phosphorus by double decomposition. It is removable without decomposition, as when carbol vapour is passed over red-hot zinc, benzine resulting; thus $Zn+C_6H_5,OH$ becomes $C_6H_5,H+ZnO$.

When the hydrogen of the carbon nucleus $C_6H_5$ is replaced by another body, the compound formed possesses tolerable stability. Thus by the action of chlorine on carbol or on its derivatives, all five atoms of hydrogen of the carbon nucleus $C_6H_5$ may be successively replaced by chlorine, mono, bi, tri, tetra, and quint chloro-carbols resulting. In the same way, the acid residue $NO_2$ can replace one, two, or three of these hydrogen atoms, forming mono, bi, and tri nitro-carbols (the last being picric acid). The acid residues $SO_3H$, and $CO_2H$ (in the latter case salicylic acid being formed) may be similarly substituted. So also may the radicals of the alcohols, as methyl.

Carbol has a hydrate discovered by Calvert, and having the formula $C_6H_5O,H,\frac{1}{2}(H_2O)$. It may be prepared by adding four parts of carbol to one of water, and exposing it to a cold of 4° C. It crystallizes in six-sided prisms; we know of no other differences between it and carbol itself. When passed through a red-hot tube, carbol vapour is in part decomposed, a little naphthaline resulting. The statement of the text-books, and copied by Lemaire (*L'Acide Phênique*), that carbol heated with ammonia in a sealed tube is converted into aniline, has been recently shown by Berthelot to be incorrect.

---

[1] Throughout this paper, the unitary notation is used, oxygen = 16, and is biatomic.

As yet, we have no means of estimating carbol. Its specific gravity, 1.066, is so nearly that of water, and its strongest aqueous solutions (5 per cent.) contain so little of it, that we cannot estimate it, as we do alcohol, by the specific gravity.

To detect carbol, Berthelot's is the best test. Thus, the liquid should be nearly colourless, free from aniline, or any body on which Labarraque's liquid will act. It should be warmed, made alkaline with a few drops of ammonia water, and then receive one-twentieth its bulk of the "Liq. Sodæ Chlor.," U. S. P. If the quantity of carbol present is very small after perhaps an hour, the liquid will be found faintly green, changing in twenty-four hours to a deep blue. The liquid becomes blue at once if a large amount of carbol is present. This blue passes into brown, and a brown-black precipitate falls. This test is characteristic. By it the one-hundredth of one per cent. of carbol can be recognized. The sense of taste, however, can also appreciate this dilution. When a ferric salt is added to carbol, a violet coloration occurs. The test is not characteristic ; cressol, salicylol, saligenin, pyrocatechin, all allied to carbol, react similarly. The gases evolved by the action of chlorohydric acid on potassic chlorate convert carbol into tri-chlor-carbol, the odour of which is so strong and enduring that this reaction might serve as a test for carbol, if sure that chinon, salicin, etc., were absent. We are thus particular about the tests for carbol, because writers on this subject content themselves with declaring that they have readily detected carbol in the breath, urine, sweat, etc., without particularizing the method, and others fail to verify their results. We can confirm the statement of Lemaire (*L'Acide Phénique*, p. 118) that carbol does not interfere with the reaction by which oil of mustard is developed from myronic acid, nor by which bitter almond oil is developed from amygdaline by emulsin, provided 5 per cent. (or less) solutions be used. But carbol liquefied by a little heat and moisture retards the appearance of these oils for several days. We also found, as stated by Lemaire, that carbol does not interfere to prevent the conversion of starch into sugar by diastase. Lemaire believes that carbol does not act on pepsin, from the fact that dogs, to which he gave cheese, albumen, etc., mixed with carbol, digested it well. Our experiments made with infusion of rennet demonstrated that carbol did not interfere with the curdling of casein until 3 per cent. solutions were used.[1] Moreover, we have not observed, after exhibiting it remedially in doses of six grains, any interference with digestion.

Lemaire states that bodies affected with carbol readily part with it on exposure to air, and he uses this explanation to account for the fact that

[1] We know it is not proven that the curdling power of rennet is the same as the digesting power of pepsin. It is probable, however, that the curdling power is a property added to the ordinary digesting power of pepsin in young animals.

bodies like albumen, etc., after being carbolized, if exposed to the air, putrefy from loss of carbol (*De l'Acide Phénique*, p. 17, and note on p. 40). Our observations are not consistent with this explanation.

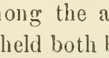
Most organic bodies retain traces of carbol sufficient to prevent putrefaction for a long time. In one case, some albumen coagulated by carbol and then exposed in an open vessel during a warm, but dry summer, at the end of four months still retained carbol, which it parted with only to warm water. Urea tenaciously holds carbol for a long while, so does gelatine and many other organic bodies. The fact is, the volatility of carbol depends greatly on the humidity of the air. Carbol possesses a great affinity for water, and the power of air to absorb it and carry it off depends, in a great degree, on the amount of moisture present. The neglect of this circumstance, and failure to correct the experiments, render the tabular statements of Sansom (at p. 14), "On the Volatility of Carbolic Acid," valueless.

The gases given off by the action of sulphuric hydride on barium peroxide, and on potassic permanganate, colour carbol solutions crimson. Sulphurous gas produces a yellow coloration. Gently heated with excess of ammoniac carbonate, a deep indigo-blue results. In short, the most striking chemical property of carbol is the variety and brilliancy of the colorations resulting in its reactions with other bodies.

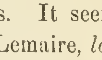
For a long time, carbol was ranked among the acids. It seemed to form salts with bases. This opinion is still held both by Lemaire, *loc. cit.*, p. 41, and by Sansom, p. 65. Calvert,[1] however, whose results have been verified by Romei, has shown that when carbol is added to solution of potash, it dissolves, not in proportion to the amount of base present, which it should do had a salt been formed, *i. e.*, if carbol had played the role of an acid. We conclude, therefore, that carbol is not an acid.

Laurent,[2] at one time, regarded carbol as an aldehyde, assigning to its formula the construction $C_{12}H_6O_2$ (old notation). But carbol is not an aldehyde, for it refuses to unite with acid sulphites and with aniline. All aldehydes unite with the former, and most unite with the latter.

The prevailing opinion, until very recently, has been that carbol is an alcohol—the hydrated oxide of phenyl; and some, whilst being driven from this opinion, still hold that it is a secondary alcohol like the isopropylic. Comparing it with wood spirit, we have



$\left.\begin{array}{l}C_6H_5\\H\end{array}\right\}O$



$\left.\begin{array}{l}CH_3\\H\end{array}\right\}O$. Propyl. Alcohol (carbol), Methyl. Alcohol (Wood Sp.)

This formula-making of chemists is apt to mislead. It is merely guessing that a body whose elements are known and numbered has these elements arranged in a particular manner; and if this arrangement of elements is like that of any known class of bodies, we say (*i. e.*, we guess) the substance under consideration belongs to this class. In the case of carbol, we have guessed that it should be classed among the alcohols. It is an endeavour to represent probabilities which can become certainties only by the concurrence of known and, perhaps, at the time, unknown facts. When chemists say carbol is an alcohol, they really mean to say, Is carbol an alcohol? Its atoms may be arranged like the atoms of the alcohols, but are they so arranged? An answer to these questions can only be obtained from a study of the decompositions of carbol, and from a consideration of its relations to other bodies.

---

[1] Quarterly Journ. Chem. Soc (2) vol. iii. p. 67.

[2] Révue Scientifique, vol. xiv. p. 341.

The only evidence for supposing carbol an alcohol is afforded by the fact that the hydrogen of the water residue can be replaced by a metal, or a radical, as we have seen. On the other hand, we find—

(1.) An oxidizing agent fails to convert carbol into a body like aldehyde, whence, by further oxidation and dehydration, an acid arises.

When an alcohol is so oxidized, first an aldehyde, and then an acid, is produced.

(2.) When chlorine acts on carbol, carbol chlorinated compounds arise.

When chlorine acts on alcohol, aldehyde is produced.

(3.) Nitric acid forms nitro-carbols (*e. g.*, picric acid), $NO_2$ being substituted for H of the *carbon nucleus* $C_6H_5$.

Nitric acid, with alcohol, forms ethers, $NO_2$ being substituted for H of the *water residue* OH.

(4.) Sulphuric acid forms, with carbol, carbol sulphuric acid, not convertible into ether.

With alcohol, it forms sulpho-vinic acid, convertible into ether.

(5.) The oxygen of the water residue OH of carbol, as of alcohols, is replaceable by phosphorus-chloride, bromide, etc., but with different results as respects the products arising. In the case of an alcohol, true chlorides, bromides, etc., of the alcohol radical arise, from which the alcohol can be readily reproduced, and which show double decomposition with water, alkalies, and acids. Carbol, on the other hand, when treated with phosphorus-chloride, yields chloro-benzine, from which carbol cannot be reproduced, which does not suffer double decomposition with water, alkalies, and acids, and which is not, therefore, a true organic chloride, like the chloride of the alcohol series.

A crowning objection to the hypothesis is this: The members of the carbol sereis (save carbol itself) have their atoms arranged in two different ways. When arranged in one way, they have the properties of carbol. In the other way, they have the properties of an alcohol. Thus the group of atoms $C_7H_8O$ has been found to have two different arrangements. When arranged in one way, we have a true homologue of carbol—cressol—a body very like carbol in all its properties. Arranged in another way, we have benzilic alcohol—a true alcohol. A more correct statement is that the group of atoms $C_7H_8O$ sometimes plays the role of a body like carbol, sometimes that of an alcohol; and in the latter case, we infer that its atoms must be differently arranged from what they are in the former. Or more fully stated, benzilic alcohol owes its properties to the fact that its atoms are arranged on the general plan of the alcohols. Cressol having the same composition as benzilic alcohol, has quite different properties. We infer, therefore, that its atoms must be arranged differently from the arrangement of the atoms of benzilic alcohol, and not on the plan of the alcohols in general, and hence cressol is not an alcohol. If cressol, and phlorol, etc., homologues of carbol, are not alcohols, carbol itself cannot be an alcohol. It has been replied to this that cressol (and carbol) is a secondary alcohol; *i. e.*, an alcohol containing the same atoms as the primary alcohol, but having them differently arranged—such an arrangement, in short, that on being oxidized it yields acetone, instead of aldehyde. Now, in the first place, cressol on being oxidized yields no body like acetone. Carbol, besides, not only yields no body like acetone on oxidation, but it is oxidized with great difficulty. It may also be recollected that the very existence of secondary alcohols is hardly established. We know as yet of but one secondary monatomic alcohol—the isopropylic—and from this one chemistry hardly can draw the data to establish the properties of a class. We conclude, then, that the hypothesis that carbol is an alcohol is inconsistent with known facts.

What, then, is carbol, and to what class do its analogies assign it? If not an acid, an aldehyde, nor an alcohol, what is it? Do we know of any class of bodies possessing the chemical relations of carbol? We do not. Scientific law, then, requires us to rank carbol by itself, to admit, at least for the present, the existence of a separate class of bodies of which it is the lowest member, and allows us, with Berthelot, generically to call this class—the Phenols.

There is reason for regarding carbol as benzene, in which one atom of hydrogen has been replaced by the water-residue OH. Thus:

$$\underset{\text{Benzene.}}{C_6H_5,H} + OH \text{ becomes } \underset{\text{Carbol.}}{C_6H_5,OH} + H.$$

In the same manner the homologues of carbol (cressol, etc.) arise from the homologues of benzene (toluene, etc.). Hence we say that the Phenol series arises from the Benzin series by substituting OH for H. We may notice, too, that it is possible in the Benzin series to replace two and even three atoms of H by two and three atoms of OH. So arise the biatomic and the triatomic Phenols.[1] These relations are most clearly set forth in the table below.

---

[1] It will now appear why we prefer the word carbol to designate carbolic acid. In the first place, it is non-committal, involving no hypothesis. Then, it comes

*Table of Benzins and Phenols.*

| | BENZINS. | PHENOLS. | | |
|---|---|---|---|---|
| | | Monatomic. | Biatomic. | Triatomic. |
| 1 | Benzene,<br>$C_6H_5,H$. | Carbol,<br>$C_6H_5,OH$. | Pyro-catechin,<br>Resorcin,<br>Hydrochinon,<br>$C_6H_4(OH)_2$. | Pyro-gallol (pyrogallic acid), Frangnline,<br>Phloro-glucine,<br>$C_6H_3(OH)_3$. |
| 2 | Toluene,<br>$C_7H_7,H$. | Cressol,<br>$C_7H_6,OH$. | Homo-pyro-catechin,<br>Orcin,<br>Guajacol,<br>$C_7H_6,(OH)_2$. | |
| 3 | Xylene,<br>$C_8H_9,H$. | Phlorol<br>(Xylol) ?<br>$C_8H_9,OH$. | Beta-orcin,<br>Veratrol,<br>Kreosol,<br>$C_8H_8(OH)_2$. | |
| 4 | Cumene,<br>$C_9H_{11},H$. | Unknown. | | |
| 5 | Cymene,<br>$C_{10}H_{13},H$. | Thymol,<br>$C_{10}H_{13},OH$. | Hydro-thymo-chinon?<br>$C_{10}H_{12}(OH)_2$.[1] | |
| 6 | Unknown(?)<br>$C_{11}H_{15},H$. | | | |
| 7 | Unknown,<br>$C_{12}H_{17},H$. | | Thymoilol,<br>$C_{12}H_{16}(OH)_2$. | · |

Pyrocatechin and pyrogallic acid (properly, pyrogallol) have long been known, but only recently properly classified. Cressol is associated with carbol, and possesses all its properties, and according to Angus Smith (*Disinfectants*, p. 90), it is only a little inferior to carbolic acid in disinfecting power. It is supposed by Gladstone to be convertible into carbol by simple contact with zinc, or calcium chlorides.[2]

From orcin comes the litmus of commerce.

Guajacol (found in guaiac resin); veratrol (in seeds of *Veratrum sabadilla*), and kreosol, together with cressol and carbol, constitute the bulk of wood creasote.

---

very near to the word originally proposed by Runge. If we use the word phenol (which has been proposed in lieu of carbolic acid) to designate the class, we shall need some other word to specify the individual. Carbol is a word constructed like the other phenols, as cressol, phlorol, etc.; it is euphonic, easily written, not liable especially in prescribing to be mistaken for anything else, readily convertible into a verb, or adjective, and not yet appropriated.

[1] Carstanjen in Journ. für Praktische Chem., No. 2, 1871.

[2] Chemical News, ii. 98.

Thymol, found in oil of thyme, has been used in surgery successfully as a substitute for carbol.

The whole truth does not appear in the above table. The formula of toluene we have represented thus: $C_7H_7,H$. It may be arranged thus: $C_6H_5,CH_3$. If we take the latter representation as a true expression, toluene is benzene $C_6H_5,H$ in which H has been replaced by methyl $CH_3$. *Toluene was thus made in* 1864 *by Fittig & Tollens* (*Annal. Chem. Pharm.*, 131, p. 308). Thus: when mono-brom benzene is added to methyl bromide, and the mixture affected with sodium, bromide of sodium is formed, whilst benzene and methyl, meeting in the nascent state, unite to form methyl-benzene identical with the toluene found in coal tar or derived from balsam. Toluene is thus $C_6H_4\left\{\begin{matrix}H\\CH_3\end{matrix}\right.$, and toluol $C_6H_4\left.\begin{matrix}\\\end{matrix}\right\}\begin{matrix}OH\\CH_3\end{matrix}$.

This process is of general applicability, and its application has thrown much light on all the bodies composing the aromatic series. It is the most interesting synthesis since Frankland first made ethyl. Other alcohol radicals, as well as methyl, may be used. Thus, if ethyl bromide is employed in the above process, xylene (phlorene) results, and from this phlorol (identical with the phlorol obtained from baric phloretinate by Hlasiwetz) is derived. By substituting amyl bromide for methyl bromide, Fittig & Tollens made amyl-benzene, which is No. 6 of the table, and marked unknown. They have shown that there are at least four isomeric bodies derivable from benzene having the composition of No. 5 of the table. Thus, tetra-methyl-benzene = $C_6H_2, (CH_3)_4$; di-methyl-ethyl-benzene = $C_6H_3, (CH_3)_2, C_2H_5$; methyl-propyl-benzene = $C_6H_4 (CH_3), C_3H_7$ (cymene), and butyl-benzene = $C_6H_5,C_4H_9$.

In commerce, carbol is always obtained from coal-tar, in which it is found associated with cressol, aniline, picoline, etc. The plan is to distil coal-tar, collecting the distillate of 150°–200° C., agitating this with soda lye, which, dissolving the carbol, cressol, etc., rises to the surface, and is removed, then decomposed with a mineral acid, and again distilled. The distillate of 184° C. is carbol of commerce. The details of the process, on which so much depends, each manufacturer keeps to himself, such secrets being stock in trade.[1] Carbol may be also obtained by distilling salicylic acid. This carbol is less deliquescent than the carbol of tar. Although carbol has not been made by direct oxidation of benzene, it can be obtained indirectly from that substance; for, when sulpho-benzene is fused with potash, potassic sulphite and carbol result. Berthelot has made the interesting observation that the vapours of alcohol, or acetic acid, passing through a red-hot tube, are in part converted into carbol.

It is pretty generally accepted that carbol precipitates albumen, and this supposed property of carbol has even been proposed for employment as a

[1] Consult Crace Calvert in Lancet for March, 1868.

test for albumen in urine and the like, in place of nitric acid. Our results are opposed to this view. Sansom, too, declares (p. 11) that its power in this respect has been overestimated.

When the albumen of egg or of serum is mixed with melted carbol, or even with 5 per cent. solution of carbol, the albumen is at once curdled, exactly as if strong alcohol had been added. The curds may be washed free from carbol, and will then putrefy under favourable conditions, just as any other coagulated albumen. Globulin behaves itself like albumen. A solution of albumen or globulin (from the crystalline lens), 1 per cent. strong, is not coagulated by any amount of a 1 per cent. or 2 per cent. carbol solution. A 3 per cent. carbol solution renders it opalescent, an opalescence which vanishes if more albumen solution is added. Not until a 5 per cent. solution of carbol is added does any coagulation take place. In the cold, carbol seems to be without action on albumen; for no matter how much the latter is in excess of the former, it is always possible to detect carbol by Berthelot's test, just as if so much water had been added, instead of the albumen solution. We consider it established: 1st. Carbol coagulates albumen by withdrawing its water. 2d. Carbol in the cold forms no compound with albumen.

There is a singular property of carbol, not before noticed we believe, which can properly find notice here. When albumen—as coagulated egg—is gently digested with melted carbol, it dissolves, forming a light yellow syrup. By addition of water to this syrup, albumen is precipitated, whilst, by the action of cold, the excess of carbol crystallizes out, leaving a rather bland brown syrup which tastes very feebly of carbol, and gradually dries into a transparent film not acted on by water. If the syrup is boiled, the excess of carbol passes off, and the liquid on cooling gelatinizes, becoming brown. Exposed to the atmosphere this jelly becomes white, the change seeming to commence at the centre of the mass, an efflorescence of carbol (?) crystals will also be found. After a while this whiteness disappears, the mass becoming transparent again as it loses water until it dries into a hard lump looking like a piece of copal. It gives evidence of the presence of carbol six months after its first exposure to the air, and although subjected to rain, wind, sunshine, damp, heat, and cold, it neither putrefies nor moulds. Fibrine, casein, or globulin, may be substituted for albumen.

The white spot on the skin produced by creasote or carbol, has been noticed for a long time, and has been referred to a coagulation of the albumen of the skin. But this is not the whole truth. In a few minutes after the appearance of the white spot, it begins to fade, and in an hour has disappeared. The white spot is caused by a coagulation of albumen, *and* by a contraction of the capillaries of the part. The disappearance of the white spot is caused by the dilatation which succeeds the contraction of the capillaries (with, of course, more or less reddening), by the solution of the albumen coagulated in the serum which is poured out under the skin forming a wheal, and by the power of carbol itself to render a mass of white albumen transparent by prolonged action.

By aid of heat carbol can, apparently, be made to combine with albumen. Thus: Blood serum was acted on by the reagents named, boiled, the coagula thoroughly washed, dried, and weighed.

| | Grammes. |
|---|---|
| 20 cc. of blood serum mixed with 20 cc. melted carbol, washed coagula | =1.460 |
| 20 cc. " " " " 5 cc. nitric acid " " | = .786 |
| 20 cc. " " " " 40 cc. 5 per cent. carbol " " | = .902 |
| 20 cc. " " " " 40 cc. 2 per cent. " " | = .857 |

Egg albumen was diluted with three parts water: 20 cc. contained .5565 grammes.

| | Grammes. |
|---|---|
| 20 cc. of albumen solution + 10 cc. 5 p. c. carbol solution evaporated dried at 200° C. | =.5960 |
| 20 cc. " " " + 20 cc. " " " | = 5825 |
| 20 cc. " " " + 30 cc. " " " | =.6210 |
| 20 cc. " " " + 60 cc. " " " | =.6250 |

A more dilute solution of albumen, in which 40 cc. contained .4555 grammes, yielded these results:—

| | Grammes. |
|---|---|
| 40 cc. weak albumen solution + 10 cc. 5 p. c. carbol solution evaporated and exposed to 200° C. | =.4680 |
| 40 cc. " " " + 20 cc. " " | =.5995 |
| 40 cc. " " " + 30 cc. " " | =.6320 |
| 40 cc. " " " + 60 cc. " " | =.5775 |

After these mixtures had evaporated to dryness at a temperature below 60° C. the residua were washed with water, and then dried for a long time in an oil bath at 200° C. No carbol could be detected after subjecting them to this process. These residua, so dried, presented the appearance of the dried films obtained from a solution of albumen in carbol. They readily decomposed, emitting a rotten odour.

Carbol solutions, as is well known, precipitate gelatine solutions only when these are concentrated, so that a precipitate occurring in a strong solution is at once dissolved on addition of water. The precipitation is due simply to obstruction of water. Prolonged boiling with carbol has no influence on gelatine. It neither unites with it, nor is its gelatinizing power impaired.

Carbol behaves differently with decomposing albumen or gelatine. We divided a solution of albumen into two equal parts. One part was placed in a glass-stoppered bottle, which it fitted exactly, and was placed on ice. The other portion was allowed to decompose, and in a few days was rotten. Equal bulks of carbol solution were now added to each albumen solution. After six hours' standing in closed vessels, carbol was readily enough detected (by Berthelot's test) in the sweet albumen solution, whilst it had totally disappeared in the rotten solution, and it was not until three more portions of carbol solution (equal in bulk and strength to that first employed) had been added to the latter, that it was possible to recognize free carbol in it. Evidently, the carbol in the latter had been acted on by some body which destroyed it, at the same time, probably, combining with it. The solution of rotten albumen, after it had received its four portions of carbol, lost its disagreeable odour to some extent. It was filtered, evaporated, and encouraged to crystallize, but no crystals formed, and it dried up into a friable mass. We may add that the sweet solution of albumen, which had received one portion of carbol, for a time underwent no change. The carbol, however, gradually disappeared, and the solution no longer reacted with heat and nitric acid, showing that the albumen had been changed. The solution became rotten. The explanation seems to be that carbol preserves a definite quantity of albumen from decomposition. If an insufficiency of carbol is added to a solution, a portion of the albumen may decompose. After decomposing, the carbol can unite with it. Hence a portion of the carbol disappears. This process being repeated, occasions the gradual but finally total disappearance of carbol, and then the remainder of the albumen decomposing, we have a rotten odour. Marvellously small quantities of carbol have been credited with preserving organic matters from decomposition. Thus Lemaire, in his chapter on the applications of phenic acid to preservation of anatomical material, recommends, p. 375, 1 per cent. solutions for injection, and says if the temperature does not exceed 20° C., the cadaver can be preserved for two months. If the temperature rises, he says, that this causes volatilization of the acid, and hence putrefaction results. Our explanation would be like that offered in the case of the sweet albuminous solution. The carbol, when injected in a 1 per cent. solution, at once combines with any decomposed albuminoids which we know have power to determine putrefaction in perfectly fresh albuminoid matters in their vicinity. Thus the predisposition to decay (if we may use the expression) is taken away. But as the body putrefies little by little, the carbol, combining with the degenerate albumen little by little, disappears, and after it has all been taken up or destroyed by the decomposing albumen, the albumen which remains, and which goes on to decompose, emits the usual rotten odour. The case would be different if 5 per cent. solutions were used. In this case the preservative property of carbol would consist in its power to abstract water and coagulate albumen. It would preserve just as alcohol does. Lemaire publishes a letter, p. 298, from M. Lambert, from which it appears that the firm of Lambert & Biraben, of Montevideo, had practically solved the problem of applying carbol to the preservation of beef without injuring its quality, and at a reasonable cost. The plan is to deprive the meat of as much water, bone, etc., as possible, then to compress it by a hydraulic engine, and then to bale it in canvas soaked in tar containing 20 per cent.

of carbol. As this was six or seven years ago, and as the plan has made no commercial demand for the beef so prepared, it is probable that some defect has been found in the process as to expense, etc., or in its results as to the vendibility of its products. Carbol does not possess the qualities which fit it for the use of the anatomist, as a substitute for alcohol. It cannot always be relied on to preserve a pathological specimen. Thus we lost, by relying on carbol, a uterus, etc., with the ovary dislocated into the cul de sac. Although the specimen was thoroughly covered with a 5 per cent. carbol solution, in a tight vessel, it decomposed, and, in two weeks, was swarming with maggots; the parts were infiltrated with pus, and had not been placed in the jar immediately after removal from the body. Lemaire would explain this by the presence of the large quantity of pus. Pus contains oil in notable quantity, this oil should dissolve the carbol, and he has shown (and Sansom also) that oil greatly diminishes all the powers of carbol. Indeed, the former writer, at p. 384, quotes Gratiolet to the effect that carbol will not preserve crabs from decomposition, because these animals are possessed of a very large liver full of oleaginous material. We attributed the loss of the specimen to the excessive quantity of decomposed albuminoid matter with which the carbol was at once neutralized.

We added carbol, liquefied by heat and moisture, to butyric, valerianic, acetic, formic, and lactic acids, to the essences of apples, pears, and pineapples, to decomposing leucine, to phosphuretted and sulphuretted waters, with and without ammonia, to propylamine, to benzene, acrolein, assafœtida, and onion-juice, to oils of cognac, citronella, peppermint, bergamot, and turpentine, and to the liquid of horrible and penetrating odour arising in the manufacture of tyrosine by the action of potash on albumen. In none of these cases was there any diminution of odour. Usually, the feeble carbol odour was quite extinguished. The following comparative experiment was made:—

1 gramme rotten pancreas was mixed with 1 per cent. melted carbol (1.)
" " " " 5 " " " (2.)
" " " " 10 " " " (3.)
" " " " 1 " zinc chloride dissolved (4.)
" " " " 5 " " " (5.)
" " " " 10 " " " (6.)
" " " " 1 " potassic permanganate (7.)
" " " " 5 " " " (8.)
" " " " 10 " " " (9.)
" " " " 1 " bleaching powder (10.)
" " " " 5 " " " (11.)
" " " " 10 " " " (12.)

Nos. 1, 2, 3, 4, and 5 were not deodorized. Nos. 6 and 7 were nearly deodorized—8 and 9 perfectly deodorized. In 10 the odour was diminished. Nos. 11 and 12 smelt of bleaching powder only. Neither in

Lemaire's nor in Sansom's works can we find experiments similar to the above, although the latter author attributes great deodorizing power to carbol. Lemaire, however, p. 337, "Disinfection," substantially declares that carbol is not a deodorizer. Our experiments support the latter opinion.

Little is known of a definite nature respecting the disinfecting powers of carbol. The subject is an extensive one, and difficult to handle. Lemaire and Sansom content themselves with assuming that putrefaction is due to germs, carbol kills all germs, so that it *must* be a disinfectant. Thus, Sansom says, p. 20, "All disinfectants act in virtue of and in proportion to their power as septicides." Admit this, and the case for carbol is made out. Unfortunately, evidence of this kind is about all that we are likely to get. Is it not better to confess ignorance at once?

Parkes, at Netley, conducted for the British War Office a series of experiments to determine the position of disinfectants in power, cost, etc. His results are, on the whole, unfavourable to the extensive use of carbol, for though first in power, it was greatest in cost. He found that sixty grains were required to disinfect the excreta of the twenty-four hours of an individual. Lemaire "disinfected" (?) a privy containing 15,000 litres of ordure by 200 grammes of carbol (*De l'Acide Phênique*, p. 339). Parkes, in his experiments at Netley, found that whilst he was made sick (having fever, furred tongue, headache, and changed pulse) by inhaling the odours from ordinary sewage, that this did not occur if the sewage had previously been affected with carbol. This is certainly very much to the purpose, so far as it goes. Compare such an experiment, however, with the demonstration made in our own navy, that yellow fever can be exterminated by battening down hatches, and turning superheated steam into the hold. In the latter case, the result was conclusive beyond all peradventure, 1st, that the poison of yellow fever is neutralized by superheated steam, and, 2d, that superheated steam can be used for this purpose. Who would care to exchange superheated steam for carbol in a vessel infected with yellow fever?[1]

In the application of carbol to hospital disinfection (we mean the freeing a hospital of the poisons of erysipelas, puerperal fever, and the like, and not the destroying of a mere odour), but little has been done; and we fail to see how more definite conclusions can be reached than were adopted by Dr. Russell, at the Glasgow Fever Hospital, who, after a patient use of carbol as a disinfectant in the wards of that institution, declares, "As to the practical benefit of this process, I am unable to state that this or that has been the result." (*Glasgow Medical Journal*, February, 1869, p. 210, quoted in *Braithwaite* for July, 1869.)

---

[1] Scepticism as to the disinfecting powers of carbol surely requires no apology after the spectacle of a large steamer—the Franklin—having case after case of cholera on it, to the number of a hundred (although it had touched at a port where plenty of carbol could have been obtained), and continuing to be infected after reaching New York, so that the surgeon and others died. If carbol is a disinfectant, why was it not used to stamp out the disease on its first appearance? It is hard to imagine a case more suitable for its application, or where its use would more certainly have exterminated the infection—if it is possessed of the power so unwarrantably accorded to it. Here was a chance for a crucial experiment worth more than the assertions of all the Boards of Health in the world that so "many pounds of carbolic acid have been used in the late epidemic."

We think that Dr. Russell's experience will be that of every one who uses carbol to "improve the air" of a hospital; and whether it would be right to experiment with this substance for the cleansing of wards from pyæmia, erysipelas, puerperal and yellow fever, etc., whilst we have such a powerful destroyer in superheated steam, belongs to ethics. It is in the application of carbol to the cleansing of wards, ships, etc., so polluted, that the solution of the question lies, and certainly there must be plenty of opportunities for testing the powers of carbol of destroying persisting contagion, in which steam is inapplicable. It is difficult to overestimate the importance of this matter. Meanwhile, however, we may experiment, and draw inferences therefrom as to the disinfecting powers of carbol. Thus, experiments on an extended scale might be made with smallpox, and vaccine virus, affecting these poisons with varied but *definite* carbol solutions, as carbol in oil, of one to twenty per cent., in glycerine, syrup, etc. Aqueous solutions of carbol, from one-half to three per cent., should be studied in this relation, and these same strengths after the carbol solutions have been acted on with sweet and with rotten albumen—this to determine whether it acts by killing organisms or by combining with those degenerate educts of the animal body which are at once the home and the food of the contagion. The poisons of glanders, hydrophobia, and even of syphilis, might afford adjunct experiments as a check upon the above.

Having settled the question for these tangible contagions, on which we can experiment so accurately and demonstrate so clearly, we might be justified in extending our conclusions to the more inscrutable contagions—cholera, typhus, and the like. At all events, pending the grand proof (to be obtained only by the successful use of carbol in practice against definite contagions), our faith in carbol as a disinfectant would rest on something like a definite foundation. As it is, we must use carbol without purpose, perhaps without confidence, feeling all the while that we may be neglecting other certainly potent disinfectants (steam, nitrous acid), merely to be in the fashion.

We have made a few experiments to determine whether carbol in aqueous solution will destroy the poison of vaccine. We powdered a healthy scab of fresh vaccine, and divided the powder into three parts, two of which were hermetically sealed in glass tubes. The other portion was affected with two per cent. solution of carbol—enough to make a syrupy liquid. With the lymph so prepared we vaccinated eight unprotected infants. Vaccination failed in all. The second tube was then opened, and affected with one per cent. carbol solution. Three out of four of the eight upon whom the first trial was unsuccessful, were vaccinated successfully. The other tube was opened and mixed with water, and the four remaining infants vaccinated. Of these four, only one was successful. Some five per cent. carbol solution was then affected with rotten serum, in such a way that after filtration the filtrate contained two per cent. of altered and unaltered carbol. With this was mixed some of the powder of the last opened tube, and a man who bore such faint marks of vaccination as to leave the question of his safety in doubt, was inoculated. A spurious vaccination resulted, showing that the vaccine power was unaltered, but the man after all protected.

Before concluding this part of our subject, we must notice, at least briefly, the employment of carbol in rinderpest. Thus, according to Crookes, certain farms in the track of the plague enjoyed immunity by using vapour of carbol disseminated throughout the stable. By way of experiment, a healthy beast was placed near one affected with the disease—the atmosphere of the stable being charged with vapour of carbol *and* of sulphurous acid gas. The healthy beast remained healthy for a month. A second experiment was not so favourable, for the sound beast died on the thirteenth day of the exposure. We may remark here that the interpolation of the sulphurous acid gas was improper, if it was intended to make a fair experiment on the powers of carbol. Again : he records that the disease was checked on a farm where it was raging in its usual course, by the free use of carbol *and* sulphurous acid gas. On another farm, the cattle having been divided into two lots, one lot, forty-five in number, was placed in stables treated with carbol *and* sulphurous acid gas. The other lot, twenty-eight in number, was placed in stables not so treated. The disease was accidentally brought by inoculation into both lots. In the first-mentioned lot (protected), only those individuals who were inoculated took the disease. In the second lot, all took the disease, and all died. Mr. Wm. Hope, who has had great experience in the disease, says, of a herd of two hundred and sixty cows, treated on the "carbolic acid plan" (by carbol and sulphurous acid gas ?) at Crookes's suggestion, that he saved every one of which he took charge, whilst those not under his care died or were slaughtered. (Sansom, *Antiseptic System*, p. 132, quoted from *Chemical News* for Oct. 1870.) We cannot attach the value accorded by Sansom to these observations, as regards the disinfecting power of carbol ; and certainly the fact of employment of sulphurous acid gas shows that Crookes did not place unlimited confidence in the powers of carbol.

Cases are recorded by a French Commission appointed by the Minister of Agriculture, of the successful use *internally* of carbol, in charbon, and furuncular epidemic. (See summary in *Lancet* for May, 1869, p. 276.)

We stand, therefore, in about the same position as in 1863, when Lemaire declared that if epidemics are caused by living germs, phenic acid should prove their destruction, cholera and other epidemics thus finding in the acid a sure cure. (*De l'Acide Phénique*, p. 362.)

Of all the elemental forms, pus and lymph are the most susceptible of changes produced by carbol. Pus is precipitated readily even by one-half per cent. solution of carbol. When a drop of mixture of one per cent. carbol solution and pus is examined under a quarter-inch objective, it will be found that all cells are destroyed, their contents uniting with the carbol to form gelatinous islets, which float in a yellowish liquid. These islets are studded with granular matter. If the microscopic stage is inclined, these islets elongate, and present the appearance of ganglionic cells under a high power. If tested chemically, it will be found that the carbol has disappeared. If excess of carbol (as demonstrated by chemical tests) be added, the islets dissolve, save the granules, and we find simply a yellow liquid with granules floating in it. With pus, as found in wounds, carbol at once unites, and the two bodies dry up into a hard oily crust.

It has been stated that carbol is without action on blood corpuscles. (*Lemaire Acide Phénique*, p. 100.) Lemaire, however, does not seem to have examined the action very carefully or out of the body. The elliptical cell of birds is best adapted for examination. Thus in the blood of the common fowl, in a very thin clot under a quarter-inch, we shall find a quantity of rice-shaped cells each with a black spot in its centre. If a little 1 per cent. carbol be placed on the slide just touching the clot so as to make the action of the carbol as gradual as possible, in the course of the carbol current we will first notice a few broken-up cells (not the true corpuscles) which blacken and shrivel up as the amount of carbol increases. Presently, however, we will find the true blood corpuscles attacked. They become smaller and rounder, darker, and at last polygonal. At first they occupied the whole field, now they are so shrunken (and destroyed?) that wide spaces exist between each cell, spaces filled with a glairy liquid. In some of the cells the black spot is seen to divide, and each half to take up a new position at the ends of the cell, the cell wall at the same time contracting in the middle, though never to complete fission. Finally, such cells as have not been dissolved (?) vanish by sinking out of focus, for, on lowering the objective, they will be found lying flat on the slide. Exactly these phenomena may be observed with human blood, although in a less degree. A 3 per cent. solution of carbol intensifies the action, but, at the same time, confuses it by its rapidity and by its action on the serum.

When the juice from the testicle of the common cock is examined under a quarter-inch objective, we will find (1) spindle-shaped cells, each containing an eel-like form, which by its contortions changes the shape of the cell incessantly. These are the "vesicles of evolution" of Wagner. (2)

Small spermatozoa like those of man and mammals, but smaller. (3) The eel-like bodies released from the "vesicles of evolution."[1]

A drop of this semen affected with $\frac{1}{2}$ per cent. solution of carbol, applied as in the case of the blood-cells, failed to arrest the motion of (1), (2), or (3). One drop of 1 per cent. solution was also without effect, but two drops stopped all motion in (3); two drops of water had the same effect. A very small drop of 2 per cent. solution stopped motion in (3), but was without this action, at least for a time, on (1) and (2). A 4 per cent. solution did not entirely check motion in (1) nor in (2), though its activity was diminished. No. 3 became sharply outlined, as were the contents of (1); the cell of No. 1 began to contract. A drop of 5 per cent. solution checked motion in all three. Under its influence (1) became smaller, whilst (2) became greatly enlarged (two or three times). The cell walls of (1) were much more distinct, and the liquid in which the bodies floated thinner. On mammal semen (that of the cat errotically excited) carbol has a more decided effect. Even $\frac{1}{2}$ per cent. solutions check motion in the spermatozoa at once. It should be remembered, however, that water has the same effect. By 4 per cent. solutions the spermatozoa were enlarged and better defined and not otherwise changed. The medical jurist may find this action of carbol of practical importance in pronouncing on supposed seminal spots.

White and yellow fibrous tissue are attacked by carbol solutions slowly if these are dilute, more rapidly if concentrated. The fibres become disintegrated, assuming a granular or perhaps a worm-eaten appearance. Still, neither white nor yellow fibrous tissue dissolves in saturated carbol, even when kept for weeks at a temperature of 40° C. On muscle fibre carbol (1 per cent.) has little effect; the striæ become more distinct in consequence of a general deepening of the colour. By 4 per cent. solutions the bundles become very dark and show a disposition to split up, and the carbol besides seems to exercise some solvent power on the ends of the bundles especially.

We have expended a great deal of time and work on the action of carbol on the nervous structures, but with poor result so far as discovering any specific chemical or mechanical action sufficient to account for the marked influence (which we shall prove) carbol exerts over the nervous system. By 1 per cent. solutions the cells and their nuclei are rendered more distinct, and this is true of the walls of the tubules. Stronger solutions destroy the cells, possibly owing to the affinity of carbol for oil. However this may be, the fluid becomes filled with oil globules and cell debris floating in a thin liquid. The white substance of the nerve tubule seems to be dissolved, and vanishes.

---

[1] These observations were made on two cocks in the early spring, when the generative energy is strongest. The small spermatozoa (2) are not noticed by Wagner, at least not in his article on Semen in the *Cyclopædia of Anatomy*. We are at a loss to know what they are; only of their presence are we certain.

On milk 1 per cent. solutions are without effect, whilst 2 per cent. solutions render the microscopic field hazy. A complete coagulation of the casein, albumen, etc. occurs with 5 per cent. solutions. All aqueous solutions of carbol are without action on the globules. Carbol liquefied dilates the globules, but does not destroy them. Milk so affected has the appearance of white paint.

When a quantity of liquefied carbol is retained in contact with the skin for two or three minutes, the first noticeable phenomenon is the occurrence of the white spot. This presently becomes surrounded with a halo of congestion. Next serum commences to be effused, so that the skin is raised in a wheal. The smarting which was present at first now subsides, and in place thereof anæsthesia over that portion of the skin covered by the white spot begins. The surrounding congested parts are hyperæsthetic. This anæsthesia is at its height in fifteen or twenty minutes, and involves the whole dermal envelope down to the cellular tissue. The skin so affected may be punctured, cut, or burnt without sensation. A previous soaking of the parts in dilute acetic acid increases the power of the carbol to penetrate. As we have in a previous paper[1] shown how this power of carbol can be applied to operative surgery, we will not dwell longer on this point than to remark that a continued use of carbol as an anæsthetic in operations requiring only the incision of the skin has established our first confidence in it for this purpose. To deep-seated buboes, etc., where the inflammation and tenderness are seated chiefly in structures below the skin, it is not applicable. We think, too, there is something in this use of carbol which predisposes to a very rapid healing of the incision so made, for over and over again such incisions have healed without leaving any cicatrix. This was true, for instance, in two operations for epithelioma, in which a V-shaped piece of the lower lip was removed. In both cases pain was felt, though certainly in a lessened degree—about as much, for instance, as when ether spray is used. Solutions of carbol in glycerine have no anæsthetic, or, so far as, we could discern, other effect, when applied to the skin. Solutions in oil are less powerful than aqueous solutions, and for various reasons are not advisable for producing anæsthesia, unless for the purpose of injecting a sinus or a gunshot wound, when they are much better than aqueous solutions, provided the strength is not less than 1 : 10. Solutions of carbol in acetic acid have very powerful anæsthetic effect, but the incisions heal badly, and even if the solution is applied to sound skin an abscess is very apt to result. This we state from actual observation.

The white spot gradually fades, the place becoming brown red, and the serum disappears about the same time. After a few days this brown redness is succeeded by a tallow-like whiteness, and this is surrounded by a halo of fiery redness, like the line of demarcation in gangrene. Still the skin so affected does not gangrene, but dries up, cracks, and is pushed off by newly formed structures beneath. Then the surrounding redness fades, and in a period of from ten days to a fortnight all trace of the action of carbol has disappeared. A 5 per cent. solution, aqueous or ethereal, if confined to a spot, and prevented from evaporating, produces similar though less pronounced effects.

---

[1] Am. Journ. Med. Sciences, Oct. 1870, p. 573.

If we touch the wing of a bat with 5 per cent. solution of carbol, we will observe: 1st. A contraction of the capillaries and small arteries; 2d. Complete arrest of the circulation; 3d. Effusion of colouring matter, with coagulation. This effusion constitutes a solid clot on the *outside* of the vessels, for in a short time the vessels dilate again, and the circulation is resumed, whilst the clot remains. These effused products remain, at least in the human body, for a long time, undergoing apparently the same changes as we notice occurring in the case of a bruise. Finally only a feebly yellow trace remains, surrounding the spot where the carbol had been applied, but not invading it: this yellowness is permanent in some cases. The hair follicles are usually left uninjured.

Although creasote has been used for a long time as an application to burns, and even ulcers, yet to Lemaire belongs the credit of applying the chief constituent of creasote—carbol—with the definite purpose of preventing gangrene, ulcerations, etc., by killing the germs he believed were causative of these lapses of nutrition. Thus he applied it in anthrax, having discovered in the pus from that disease animalculæ, and with the intention, we infer, of killing the germs to which he attributes anthrax. (*Acide Phénique*, p. 452.) He used it in ulcerations, abscess, cancers, besides in various skin diseases, especially those of a parasitical origin. His theory stands forth in his practice against the more hidden internal disorders, as intermittent fever.

Curiously enough, shortly after the appearance of Lemaire's second edition in 1865, Lister, from similar theoretical considerations, announced substantially the same facts regarding carbol, and inaugurated what he called the antiseptic system. Lister has, perhaps, had greater opportunities for carrying out Lemaire's notions, and in doing so has developed and improved them as regards their practical applications. Could we but admit this evil agency of germs, Lemaire's and Lister's practice would follow as a necessary consequence. As it is in consequence of that adherence to this theory, the value of their observations diminish as their enthusiasm increases. Since Lister inaugurated the antiseptic system in Glasgow, he seems to have devoted himself to its perfection. He has tried every imaginable device for debarring germs from wounds, or for killing them after their entrance. Considering the advantages which we may derive from the use of carbol in wounds, which we undoubtedly owe to Lister, as well as his constancy and consistency to his first idea, although refusing his theory, we cannot withhold, whilst accepting his practice, our small testimony of praise and admiration.

Lister publishes, in the *Lancet* for April, 1870, the result of the practice of the antiseptic system at the Glasgow Infirmary, claiming, and correctly for aught that has been disproved, a reduction of mortality, in major operations and compound fractures, from 1 in 2, as it was before the use of carbol, to 1 in 6. This reduction is due, he says, to prevention of pyæmia, and possibly hospital gangrene and erysipelas. We can readily admit that carbol reduces the chances of pyæmia (and hospital gangrene?). Lister, we think, fails to show any reduction of erysipelas. But in admitting the power of carbol to prevent pyæmia, we furnish no argument for Lister's pet theory. Pyæmia supposes pus. Carbol prevents the formation of pus. No pus, no pyæmia. This is the conclusion *we* draw from the papers referred to.

Lister's successes have been confirmed by the practice of many others. Bottini, of Novara, reports on six hundred wounds treated by carbol. He declares it prevents suppuration, and promotes cicatrization. (*Brit. Med. Journal*, June, 1867.) Lemaire noticed this effect, and records his faith in the power of carbol to prevent suppuration repeatedly; thus *De l'Acide Phénique*, p. 477; on Cancer, p. 490; Epithelioma, p. 602; Necrosis, etc. etc. Most of the medical journals for the last five years have contained papers detailing the successful use of carbol in wounds, recounting an experience usually of five or six cases each, but almost always remarking on the unique power possessed by carbol of restraining suppuration. Carbol, however, is no specific. Some have failed in its use (if we accept Lister's statement, because they have not applied it thoroughly, we submit because it is not adapted to every wound), and have rejected it in consequence. The aggresssive way in which Lister brought forward carbol provoked a good deal of opposition, the surgeons of some of the London hospitals prejudging the question. Dr. Morton, of Glasgow, opposes it in a paper (an abstract of which may be found in the *Lancet* for May, 1870), citing cases of the failure of carbol to prevent suppuration, besides the occurrence of erysipelas under its use. His opinions would carry more weight if they displayed less of a partisan influence.

Time will show, if it has not yet shown, that the estimate of Mr. Wood, of King's College Hospital, London, comes nearest to the truth. He declares that, "whilst carbol did well applied to wounds in a hospital in good sanitary condition, it was without effect in averting those disasters which befall the wounded in a hospital, the air of which is vitiated." (*Lancet*, March, 1869.)

Our experience in the use of carbol has been comparatively limited, but that little has sufficed to convince us that carbol has a power possessed by no other known remedy of preventing or of arresting inflammation in most cases. Although our success in its use has not been unfailing, we have obtained such excellent results in several apparently desperate injuries occurring in our service in St. Joseph's Hospital in this place, that we are now accustomed to go to any operation with the feeling that, whatever else may betide, we can arrest inflammation. We will not occupy space in detailing cases; suffice it to say we have used carbol in the major amputations, as of the thigh and arm, deligation of large arteries, as the carotid, extensive gunshot wounds of both thigh and leg, compound fractures of thigh, and in particular in a case in which nearly the whole of the frontal bone was lost by necrosis, the result of an accident; perhaps twenty-five or thirty cases in all. The cases in which carbol did badly were five or six in number, and of a lesser seriousness.

The question "Why does carbol sometimes fail?" presented itself to us at an early period of its employment, and our observation has satisfied us that this failure is due to causes connected with the patient's general health. The wounds of those patients who require alcohol and bark do badly under carbol. In these cases carbol not only fails to arrest, but it even seems to aggravate, the inflammation. Carbol, therefore, is an experiment in every case. Our rule for its use is, if inflammation, as manifested by suppuration, is not checked within twenty-four hours, to abandon it at once, and administer supporting internal treatment and poultices locally. We may add that most of the cases in which carbol did badly were wounds of hand or fingers, its tendency seeming to be to start inflammation up the sheath of the tendons, forming abscesses in the palm or at the wrist. Here an immediate removal of carbolized dressings, the free use of whiskey and cinchona, and poultices, brought about a favourable change. Other wounds of hand and fingers have done well under carbol.

But there is another object to be gained by the use of carbol as a surgical dressing, besides that of averting inflammation. This is the procurement of quiet and comfort to the patient by the anæsthesia resulting. Thus, in a case of necrosis of the upper jaw, attended with exquisite sensibility to instrumentation, by the judicious use of carbolized oil (1 : 7 by measure) on lint, and injected by a syringe, we finally obtained so much insensibility that the necessary operative procedures, repeated many times, were little complained of. The pain of compound fractures rapidly disappears under its use. Balls may be searched for with best advantage after the use of carbol. Thus, in a case of gunshot of the tibia (a pistol ball entering at the popliteal space ranging forward and downward) with abscess in the head of that bone, which we had trephined under ether, it was impossible to use the probe without resorting to general anæsthesia. The free use of carbol for twenty-four hours not only changed the whole aspect of the case, but allowed us to make such a free use of the probe and scoop for nearly an hour, that we finally discovered the ball half way down the cavity of the tibia, and readily scooped it out.

We have had one case at St. Joseph's Hospital in which carbol seemed to be the exciting cause of erysipelas. The case was one of ununited fracture of the tibia, and we had carried a strand of silk threads soaked in melted carbol through the ends of the bones, using carbol, by the way, at the point of entry and exit of the drill as an anæsthetic, the patient feeling little pain throughout the operation. On the third day, erysipelas commenced at both punctures, and soon had involved the whole leg and part of the thigh, so that energetic means were required to save the limb.

We lost a private patient from pyæmia whilst under carbol treatment. The case was one of adherent prepuce and urethral stricture. We had dissected off the prepuce, and dressed the wound with carbolized oil, under which it did badly; and we changed it after the third day for tartrate of iron and potash locally, and whiskey and bark internally. On this day the man had a chill. He was labouring under chill and fever at the time of the operation, and we therefore ordered quinia, which, after he had several more chills, seemed to arrest the disease. In about a week, we returned to the carbolized dressing, as the suppuration was too free, and the wound progressed pretty well, and finally healed. Before doing so, the man had more rigors, complained of pains in shoulders, then in his knees, etc. An abscess formed in his thigh as large as a hen's egg, and a deep ulcer remained, which ultimately healed under carbolized dressing.

Six weeks after the operation the scrotum began to swell, and presently was infiltrated with little abscesses, which finally determined the gangrene of the whole scrotum, and the lower part of the tissues of the abdomen. Pus was found after death in the knee and shoulder joints, and in most of the viscera. He had no urinary infiltration, and we had no doubt that death resulted from pyæmia.

In the practical application of carbol, our usual plan after an operation is to wash the wound thoroughly with 5 per cent. aqueous solution of carbol by means of an ordinary chemical wash bottle. Then cerate, or oil carbolized 1 : 10, is applied in as great excess as possible. Stitches are then put in (which may or may not be carbolized by soaking in liquefied carbol); and on the line of the wound, silk gauze soaked in carbolized collodion 1 : 10 is spread. After which the parts, especially if it be an amputation, are put away in plenty of oakum. In using carbol on a granulating surface, there is one fact of importance to be noticed. There comes a time in the healing of wounds under carbolized dressing, when it does harm. This happens at the period of commencing cicatrization. The dermal substitute will not form under the action of carbol. The strength of the carbol dressing must then be greatly reduced, or substituted by simple oil or water. The desired action of the granulations soon commences, and the cure is not delayed.

In parting with this portion of our subject, we express the conviction that if a surgeon, in using carbol as a dressing, *could* convince himself that there are in wounds germs hostile to healing, to be successfully encountered only by the most liberal use of carbol, he would have no cause to regret his practice, whatever others might say of his theory.

It will be noticed that the cause which Lister assigns for unhealthy action in wounds is entirely objective. No one will deny that there are objective causes for unhealthiness of wounds, and germs *may* be one cause. But it is certain that in the vast majority of wounds, the cause of unhealthiness springs from within—is subjective. This is the established faith of the medical profession. Hence has arisen the classification of wounds into syphilitic, scrofulous, scorbutic. Hence the care of all surgeons before all great operations, to place their patients in as good a state of health as possible. Hence the fatality of operations in the gouty, scrofulous, and scorbutic; in the drunkard, the glutton, even in the plethoric, or in the obese. Can this experience of the past and present be all wrong? It may be asked, If Lister is right in his theory, whence come abscess of prostate, and the pyæmia sometimes attendant? Whence psoas abscess? How is it that abscess of lung tissue is so rare, considering the excessive accessibility of the lung to the entrance of the germs? Why is carbuncle of the lip more apt to end in pyæmia than almost any other accident, if pyæmia is the result of germs? Why should germs infect pus more certainly in this situation than the pus of a carbuncle on the shoulders? Why is it that chloride of zinc, aniline, and dilute sulphuric acid, all powerful septicides, have no power over inflammation like carbol? Lemaire, Liston, and Sansom, as we have before remarked, all seem quite as much interested in using carbol to prop up the germ theory as to cure disease. Pointing to the excellent results, they ask how can you explain these results more simply and conclusively than by admitting that carbol acts in these cases solely by its germ-destroying power? This is no argument, although really advanced by all three as such. It may be met and answered by silence, or it may be shown that some other theory will account for the facts in the case quite as well. To this end, and not because we attach any value to it, we offer an explanation, founded on the anæsthetic power of carbol. Our explanation, if not absolutely true, we believe to be in the *direction of the truth*, making, as it does, the causes for unhealthy action purely subjective.

The action of carbol in subduing inflammation is manifold. First, carbol breaks up all foreign organized bodies like pus, destroying their pseudo-life, and preventing the mischief which results from that life.

Secondly, carbol combines with decomposing albuminoids whose presence and contact tend to induce the decomposition of healthy albuminoids in their vicinity, thus becoming never-ceasing sources of irritation. Finally, as we have shown and others have confirmed, carbol suspends nerve irritability, producing anæsthesia, and, as Lemaire has noticed, also paralysis. It is to this property of carbol that we attribute its peculiar power over local inflammation. Carbol renders the nerves incapable of transmitting impressions of pain, and *probably* those impressions also which are concerned in the nourishment or repair of tissue. The probability here involved is a strong one. Not only clinical experience but experiments have taught us that the nervous influence, although not essential to nutrition, "may, and even almost constantly does, influence nutrition and secretion,"[1] and that both afferent and efferent nerves of nutrition must exist just as we can prove that the same or similar nerves preside over secretion. Thus, if we touch the periphery of an afferent nerve distributed to a gland, although this nerve carries no sensation of which we are conscious—as of pain—yet that some impression is carried we cannot be doubtful, for the gland is thrown into action. But other irritations excite the gland, and among others that irritant coeval or identical with the condition which calls for the secretion or other action of the gland, and which we may call the physiological irritant. Thus dryness of the fauces is the physiological irritant which originates action in the salivary glands. The analogy from secretion to nutrition is perfect. Exactly these sequences are concerned in the nutrition and repair of every tissue. We are unconscious of them, for it is not the nerves of common sensibility (or at least their function of common sensibility) that are involved. We know that information is carried to the ganglion presiding over the nutrition of the part that certain materials or forces must be sent out to enable the cells to maintain their flagging energy or threatened integrity, or even (if there is a wound) to heal a breach. There is nothing new in all this; it is the view of Brown-Séquard and others, and we may say generally accepted by physiologists. There is a happy state of wounds, a state (as in ordinary healthy nutrition) in which the calls or requisitions for force and materials needed for repair, sent over the afferent nerves, are not exaggerated. Here no excessive supplies of force and materials are sent out in response. The repair is made without inflammation; it is the repair of immediate union. The force is not exaggerated; there is no heat, the materials are exactly equal to the needs; there is therefore no redness nor swelling, and without heat, redness, or swelling, there is no pain; in short, as we have stated, no inflammation. But usually this happy state of things does not obtain. The afferent nerves carry exaggerated reports of the mischief, which become exaggerated requisitions for force and materials. The presiding ganglion responds accordingly; the efferent nerves bear exaggerated influences to the vessels (or the nerves of the vessels), and to the cells, and we have excessive action, with the symptoms of heat, redness, swelling, and pain. We find that carbol prevents inflammation, that it prevents certain nerves from carrying impressions of pain, certain others from carrying the expressions of the will (according to observation of Lemaire). We submit, then, that it is not unreasonable to conclude that carbol prevents inflammation by checking or suspending the susceptibility of the nerves of nutrition to their irritants, and so moderating, if not altogether preventing, requisitions on the presiding ganglion, that no exaggerated force is sent forth, and no excessive action takes place.

---

[1] Consult Brown-Séquard's Lectures on Functional Nervous Affections, pp. 11–23.

These views are consistent with the promptness of carbol in subduing inflammation, with the circumstance that in certain cases of low or perverted vitality caused by constitutional depression, it acts badly, with the fact that it interferes with, instead of promoting, cicatrization (the parts by the time this stage has been reached being in nearly the condition of ordinary nutrition, and, therefore, instead of repression of action, requiring stimulation), and with the fact that another anæsthetic, morphia (as reputed by the best authorities), also subdues or prevents inflammation.[1]

The theoretical views of Lister have, we think, led to positive mischief in the matter of the antiseptic ligature of arteries. In *The Lancet* for June, 1869, Lister has shown that a bit of catgut or peritoneal membrane twisted into a thread, soaked for some time in carbolized oil, and tied around an artery, undergoes curious changes, and is converted finally, according to his observation, into a "living ligature," firmly encompassing the artery at the point of deligation. Lister's experiments were conducted on the calf. He does not seem to have tried ordinary catgut, and it is to be regretted, for, had he done so, and made more numerous experiments, examining the ligature in one animal at the end of two weeks, in another at the end of three weeks, and so on, he could not have failed to find what the "living ligature" really is. Lister has tied several arteries for disease on this plan, and has met with more than one imitator. Most of the cases reported have been successful, and for the iliacs in their whole course we should prefer the carbolized ligature. A case has been placed on record by Mr. Spence, which satisfies us that the plan is unsafe in all amputations, and in ligation of the carotid. In other ligations than those named, we fail to see that it has advantages over the time-honoured silk. Mr. Spence's case was a ligation of the carotid below the omo-hyoid. He followed out Lister's directions most exactly. On the day after the operation the patient, immediately after a fit of vomiting, became paralyzed, and ultimately comatose, in which state he died on the third day. It was found after death, that the ligature had broken (dissolved would be the better expression), and had allowed the clot which had formed in the carotid to slip up into and plug the middle cerebral artery. Mr. Spence says:—

---

[1] From the peculiar action exercised by carbol on the nervous system, and especially from its power of diminishing local nerve irritability, we anticipate that its extended use in wounds will diminish the number of cases of tetanus therefrom resulting and decrease the mortality from this affliction. No one seems to be on the lookout for this result, and, indeed, it is only in tropical regions, where tetanus is such a frequent complication of wounds, that observations on this point can be made.

> "On looking at the ligature with a pocket lens, the texture of the catgut was distinctly seen, but it was so gelatinous and pulpy that it seemed as if it were cast in gelatine, and a portion removed for microscopic examination, when placed between two slips of glass, spread out like a fluid. * * * I had had some experience in tying arteries on the human subject, and I at one time conducted a very extensive series of experiments on the effects of the ligature of arteries on the inferior animals; but I never saw a case in which the ordinary ligature of silk or linen thread yielded or slipped, and never knew a case in which the constricting circle gave way, as in this case. Under these circumstances, whilst I believe carbolized silk or linen thread may be perfectly safe, I cannot avoid the conclusion that catgut, however prepared, is liable to become altered, softened, and disintegrated by the heat and moisture of the living tissues around it, and thus allow the deligated vessel again to become permeable. I learn also that in a case of amputation of the thigh in which the femoral artery had been tied with catgut, hemorrhage occurred from the ligature slipping off." (*Lancet*, September, 1869.)

We have quoted this case at length, because it seems to us conclusive. One such case of positive disaster should outweigh a multitude of successful cases.

We have studied the formation of "living ligatures" in the comb of the cock. Our plan was to make a puncture on one side of the comb, and through this puncture to carry, by a *porte meché*, a piece of carbolized catgut two inches long folded in the middle. The ends being tucked in, the puncture was sealed up with carbolized collodion. The operation was then repeated on the other side of the comb, using plain catgut and plain collodion.

It will be understood that these two bits of gut were parallel to one another, ranged in the long axis of the comb, and were passed in introducing them from behind forwards, as far as possible, and nearly to the bird's beak, but not far enough to make a second puncture in the anterior part of the comb.

### First Series, September 6.

| | | |
|---|---|---|
| Carbolized gut passed along left side of comb | A | Cock No. 1. |
| Plain gut passed along right side of comb | B | |
| Carbolized gut passed along middle of comb | C | Cock No. 2. |
| Plain gut passed along middle of comb | D | Cock No. 3. |
| Carbolized gut passed along left side of comb | E | Cock No. 4. |
| Plain gut passed along right side of comb | F | |

November 2d, two months after, cocks No. 2 and 3 were killed. The carbolized gut in No. 2 had entirely disappeared, and its position was indicated only by a black line. This black line seemed to be surrounded by a sheath-like cyst, containing a liquid having in it some nucleated cells of diverse sizes. The plain gut of No. 3 was encysted, and though weakened and even rotten, was unaltered in shape and size. December 7th, three months after the commencement of the experiment, killed No. 1 and No. 4. In No. 4 the plain gut F was rotten, but perfect in form, and save for the decomposition just as when introduced. It was encysted, and from the cyst it was easily removed, and again replaced. In No. 1 B was like F in every respect. On the other hand, the carbolized gut of 1 and 4, A and E, had altogether vanished. The places which they had occupied in the comb were indicated by a series of black dots, evidently the remains of a black line, as in C of No. 2. In both these a sheath or cyst was formed surrounding the row of black dots, and in both *this sheath was compacted into a cord in size about equal to the catgut employed in the experiment.* Here and there this sheath inclosed a glairy matter, through the centre of which passed the line of black dots.

### Second Series, December 3.

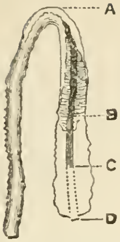
| | | |
|---|---|---|
| Plain gut passed down middle of comb | A | Cock No. 1. |
| Carbolized gut passed down middle of comb | B | Cock No. 2. |
| Carbolized gut passed down left side of comb | C | Cock No. 3. |
| Plain gut passed down right side of comb | D | |
| Plain gut passed down left side of comb | E | Cock No. 4. |
| Carbolized gut passed down right side of comb | F | |

December 17, two weeks after operation, killed No. 1 and No. 2. A (plain gut) was encapsuled, softened, and covered with a little purulent lymph. B (carbolized gut) was also encapsuled, and its free ends (nearest the puncture) were softened, and looked like jelly. Along the centre of this jelly-like mass ran a black line. The rest of the gut was very much softened, but not gelatinous. The loop end least so. It was not possible to remove this from the cyst, owing to its softened condition, and also to the fact that an anastomosis of the vessels (?) seemed to pass through its substance from one side of the cyst wall to the opposite, thus uniting gut and cyst firmly together.

January 14th, nearly six weeks after operation, killed No. 4. The plain gut E was encapsuled, softened, weakened, but not rotten nor gelatinous. The carbolized gut was encapsuled and firmly fixed. It may be remarked here, that this capsule inclosed only one strand of gut. The capsule, therefore, seemed double because it was bent on itself, following the bendings of the gut, and being moulded as it were to this. The free ends (nearest the wound) of the gut were perfectly fluid, containing the black tracing in the middle. On laying open the second thirds of the capsule, it was found that both the second or middle thirds of the gut were in a diffluent state, save a central core, which, however, was quite rotten. On laying open the capsule at its last thirds, *i. e.*, at its bend, the gut was found perfect in form, but rotten. It was not easy to lift this bent third of the gut out of its sheath after the latter had been opened. This was due to an interlacing of fibres (possibly vessels) through its substance from one sheath wall to the opposite, as in B. This is shown in Fig. 1.

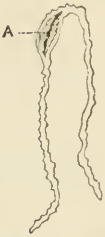
February 10th, nearly ten weeks after the operation, killed No. 3. The plain gut D was rotten and diffluent, and an attempt was evidently being made to remove it. The carbolized gut C had quite disappeared, and its place was occupied by the cyst which had surrounded it, shrunken into a cord: this at first sight seemed to be the gut itself. However, at the bend of this cord there was a very minute cyst filled with glairy matter, the last trace of the carbolized gut. This is shown in Fig. 2.

Fig. 1.



Cyst containing a carbolized ligature, one-half laid open: From C to D the ligature was wanting and its place indicated by a row of black dots. From C to B the ligature was diffluent, presenting a nebulous appearance. From B to A the ligature was tolerably firm, though rotten and attached to the cyst walls by fine interlacing fibres.

Fig. 2.



An old "living ligature" containing a small cyst at A laid open.

From these experiments we conclude :—

1st. Carbolized catgut is more easily decomposed by contact with living structures than non-carbolized catgut.

2d. The "living ligature" is merely the capsule which (at first thrown around the foreign body, possibly for its removal) has contracted into a firm cord.

When carbol is administered to a man in doses of six to eight grains, dissolved in a wineglassful of water, the following phenomena present themselves :—

1st. A loss of sensibility in the mouth and throat, or a feeling of numbness, as when aconite is applied to the lips : this is followed by a cooling sensation, like that produced by mint.

2d. Slight nausea, especially if the stomach is empty. This is succeeded by an uneasy feeling in the abdomen, like that felt before an attack of gravel.

3d. Slight vertigo, ringing in the ears, and partial deafness, judged by the ticking distance of a watch. This vertigo is so great, if the carbol is taken just after rising (and of course on an empty stomach), as to compel the resumption of the horizontal position.

4th. Loss of heart-beat, the pulse, according to our repeated observation, and on different individuals, losing from four to eight beats in a minute, failing also in fulness. The temperature under the tongue undergoes no noteworthy alteration.

5th. Diarrhœa. This is not invariable, and does not appear until several doses have been taken. If present it usually disappears on the third or fourth day of the continued administration of the medicine.

6th. After long-continued use of the medicine, feebleness of heart-beat, muscular debility, and loss of flesh occur.

On omitting the medicine after it has been taken for several days, flatulence usually occurs, accompanied with a feeling of depression, like that felt after the stimulating effects of morphia have ceased.

After taking the medicine in doses of forty-five grains in the twenty-four hours, we entirely failed to detect it in the pulmonary exhalation by Berthelot's test, although many gallons of expired air were examined, and the observation made within a half hour after the ingestion. Lemaire states that the lungs are the chief emunctories of carbol. Thus, after taking it in quantities of a gramme a day dissolved in a thousand parts of water, he declares that he expired it all day long, and that his urine smelt of it, though feebly (p. 95); and, again, on p. 107 he declares that, according to his experiments, the greater part of phenic acid introduced into the stomach is eliminated by the lungs. We will only add, that our experiments were made with care, and with knowledge of this assertion of Lemaire. We can further say that we have never observed the odour of carbol either in the breath or in the urine of those to whom it has been administered: one-half of one per cent. added to urine communicates a distinct odour of carbol to that liquid. We suspect that Lemaire has trusted to his sense of smell rather than to a chemical test in making these assertions, in support of which he offers no proof—at least not in the work from which we have quoted. We have failed to discover it in the feces, and in the sweat after violent exercise. Our observations are, however, limited to cases in which a drachm, or less, in the twenty-four hours was administered.

The urine, according to our observations, after ingestion of thirty to forty grains of carbol in the twenty-four hours, is natural in colour and odour, and deposits, by boiling, no albumen, but a little phosphates only, so that it readily clears up on addition of an acid. But if the heat is applied for some time—and the liquid need not boil—so that it is one-third evaporated, a brownish discoloration will be observed, which speedily changes into a black precipitate, coloured grayish, however, by admixture with the large amount of phosphates precipitated at the same time. After this precipitate subsides, the urine is found clear, and the further action of heat fails to produce any unusual changes. In one case, after taking forty-five grains of carbol, the urine of the twenty-four hours yielded a grayish precipitate, which, after washing with dilute acetic acid, and drying at 100° C., weighed two hundred and eight grains. Before the blowpipe, this precipitate took fire, and burnt with a sooty flame and a singed-hair odour, leaving a black coal, which yielded chlorhydric acid, a large amount of iron, and phosphates. The former was thrown down by ammonia water in rusty flakes; the latter appeared as a microscopic deposit of triple phosphate. The gray precipitate was partially soluble in dilute hot potash solution, with an odour like that produced by the action of dilute potash solution on albuminoids in general. From this solution an acid threw down a glairy precipitate like globulin. Chlorhydric acid also dissolved the gray precipitate in part, and yielded, on addition of an alkali, iron, phosphate, and a body containing carbon and nitrogen. Ordinary sodic phosphate was without action on the gray precipitate. Water, alcohol, and ether failed to dissolve it. We know of no substance in the body, save hæmatin, which contains at once the amount of iron and phosphates called for by this body. We made no quantitative estimation of these, but this was not needed to satisfy us that both iron and phosphates were present in large quantity. Of course the quantity of the precipitate obtained precludes the supposition that the body in question was a derivate of carbol. It was evidently an albuminoid, and from all the facts in the case, we believe it was hæmatin altered by or combined with carbol. We do not pretend to account for the impunity with which the body was deprived of two hundred grains of hæmatin *per diem.* We cannot find that any one has noticed this substance. Its appearance must not be confounded with another phenomenon long observed after ingestion, by mouth or skin, of creosote, tar, and carbol. We refer to the smoky or brown coloration observed in the urine under these circumstances, especially when from any cause the urine is ammoniacal. If such urine is placed in a tall jar, the browning will be observed to commence at the surface and proceed downwards. It seems to form *pari passu,* with the decomposition of the urea, into ammonia, and it usually renders the whole urine black-brown in three weeks. This solution has been the subject of discussion and experiment by several observers, thus: "Dr. Wallace concluded that the carbolic acid was carrying off the pigment of the red corpuscles. * * * Dr. Stevenson, of Guy's Hospital, London, showed that urine darkened by the systemic absorption of carbolic acid, did not contain more than the normal quantity of iron. He considers that the colouring matter was not derived from the blood. The most probable hypothesis is, that it comes from the *changed carbolic acid* itself. (Sansom, p. 283.) We coincide with this last opinion, and we even hazard a conjecture as to the nature of the change, and the name of the derivative. It must be obvious from analogy, in the first place, that any change which carbol undergoes in the body must be one of oxidation. As a rule, this is true of all substances, especially those whose educts appear in the urine. We must expect to find carbol transformed, by the time it reaches the kidneys, into a body containing more oxygen. Chinon, whose formula is $C_6H_4O_2$, is such a body. We have a perfect analogy to the changes we have indicated as happening to carbol, in the changes which alcohol (in part, at least) is supposed to undergo in its passage through the body. We may compare the changes of the two bodies, thus:—

$$\underset{\text{Alcohol.}}{C_2H_6O} - 2H = \underset{\text{Aldehyde.}}{C_2H_4O} + O = \underset{\text{Acetic acid.}}{C_2H_4O_2}$$

$$\underset{\text{Carbol.}}{C_6H_6O} - 2H = \underset{\text{Unknown}}{?} + O = \underset{\text{Chinon.}}{C_6H_4O_2}$$

That is, alcohol and carbol lose two atoms of hydrogen, and gain one atom of biatomic oxygen.[1]

So far then the case stands thus: There is a probability that carbol in its passage through the body is converted into chinon. We must now offer some corroborating evidence of this proposition, and we will be as brief as possible. Chinon presents the singular property of becoming reddish-brown when allowed to stand for a while in aqueous solution. This change is promoted by heat and by addition of ammonia; the brown becomes almost a black. These phenomena, as we have seen, occur in urine after carbol ingestion, and in fact they constitute the matter under discussion. In the next place we will find that certain reactions can be observed in urine after carbol ingestion—which must be due to the presence either of chinon or carbol—we throw salicine, aniline, and the rest out of the question; they are not present. Thus, after taking forty-five grains of carbol, the urine, if acted on by chlorine, or better by euchlorine of Davy (obtained by action of chlorhydric acid on potassic chlorate), yields the peculiar odour which dilute carbol or chinon solutions do under similar circumstances, and as the action of the chlorine proceeds a minute quantity of what we take for perchlor-chinon is formed, colouring the foam of the urine pale yellow. The case then seems to narrow down to the presence either of carbol or chinon. Let us show now that carbol is not present, and we will have another fact pointing to the presence of chinon. It is true that carbol cannot be detected by the direct application of Berthelot's test to urine. We have noticed that, even after the occurrence of the blue coloration indicative of carbol in a liquid, the addition of urine immediately rendered it colourless;[2] but, if we add even the one-hundredth of one per cent. of carbol to urine and distil it, we can readily detect carbol in the distillate by Berthelot's test. This plan applied to urine passed after ingestion of carbol has invariably in our hands failed to indicate carbol. We consider this fact conclusive, therefore, that carbol does not appear in the urine after its moderate or non-poisonous ingestion. The foreign body contained in such urine which is acted on by chlorine yielding perchlor-chinon, is again proved to be chinon. One more proof and we have done. We affected 600 cc. of urine with a little chlorhydric acid, just as in the usual way for estimating the quantity of uric acid in urine. Of this 200 cc. was placed in a beaker by itself, 200 cc. in another beaker containing a trace of chinon (the urine, by the way, becoming blood-red, a phenomenon observed, by several writers, in urine after carbol ingestion), 200 cc. more were placed in a third beaker containing a small quantity of one per cent. carbol solution. The beakers were then covered with paper and put away for the formation of uric acid. After twenty-four hours crystals of uric acid were first observed at the bottom of the beaker containing carbol, and twelve hours later crystals were observed in the beaker containing urine only. But at no time, not even after the other two liquids were crowded with crystals of uric acid, were any crystals observed in that beaker to which chinon was added, but in place thereof a pale muddy precipitate in small quantity was observed at the bottom of the beaker. The appearances obtained in this last case are found when, after the ingestion of carbol, we seek to discover and estimate the uric acid by addition of a little chlorhydric acid, *i. e.*, we have no uric acid in crystals (or but a trace) but a quantity of a muddy precipitate. These arguments we think are sufficient to secure at least respect for our conjecture, that chinon is found in urine after ingestion of carbol as a product of the oxidation of the latter. We forgot to mention that chinon is not poisonous to dogs in quantities of a drachm. (Wöhler and Frerich's *Annalen Phar.* 65, p. 343, quoted in Gmelin's *Handbuch der Chemie.*)

---

[1] This reaction, by which carbol is converted into chinon, we have succeeded in effecting in the laboratory by the action of potassic bi-chromate on carbol. The chinon volatilizes, and should be condensed in a tube.

[2] This phenomenon is due to uric acid. If an aqueous solution, coloured blue by addition of Labarraque's liquid and ammonia (the latter must not be in excess), be shaken with uric acid, the colour is discharged. The colour can be restored by ammonia.

In the table below the effect of carbol ingestion on the urine is set forth; the most noticeable thing is the lack of uniformity in its action. As we remarked, when speaking of the uses of carbol, that every case is an experiment, so in the effects on the urine every case is a law unto itself.

The urinary water, the specific gravity, and the colour were unaffected.

The urea slightly increased.

The phosphates greatly increased.

The uric acid frequently could not be observed at all,[1] and always there was such a quantity of muddy deposit that its exact estimation was impossible.

The acidity was increased.

---

[1] Fuller has noticed this circumstance, and thinks carbol prevents *formation* of uric acid. In cases where considerable uric acid deposits had been occurring, these disappeared quickly under action of carbol. He applied his ideas unsuccessfully to the treatment of gout.

*Table of Analyses showing the influence of Carbol on the Urine.*

| | | NO CARBOL TAKEN. | | | | | CARBOL TAKEN. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total urine of 24 hours. | Urea of 24 hours. | Phosphoric acid of 24 hours. | Uric acid of 24 hours. | Total acidity in acetic acid. | Total urine. | Urea of 24 hours. | Phosphoric acid of 24 hours | Uric acid of 24 hours. | Acid of urine estimated as acetic acid. | |
| | | cc. | grms. | grms. | grms | grms. | cc. | grms. | grms. | grms. | grms. | |
| Healthy man, æt. 31. | 1 | 1370 | 27.04 | 2.70 | .524 | 2.9 | 1450 | 31 17 | 2.90 | .36 | | 5 |
| | 2 | 1980 | 31.68 | .. | .680 | | 1600 | 31.20 | 2.86 | none | | 6 |
| | 3 | 1750 | 31.50 | .. | .530 | 2.4 | 1500 | 30.75 | 3.80 | none | 4 5 | 7 |
| | 4 | 1200 | .. | 2.52 | | | 1250 | 31.25 | 3.40 | .30 | 5 | 8 |
| | | | | | | | 1480 | 38 48 | 3.19 | .41 | 3.4 | 9 |
| Average | | 1575 | 30.07 | 2.61 | .578 | 2 6 | 1556 | 32.57 | 3.23 | .21 | 4.3 | |
| Cancer patient, No. 1, æt. 70. | 1 | 920 | 22.08 | 1.17 | | Alkaline | 570 | 16.24 | 1.91 | | Faintly acid | 4 |
| | 2 | 445 | 14.46 | .95 | | | 875 | 18.67 | 1.78 | | | 5 |
| | 3 | 720 | 16.05 | 1.02 | | | 930 | 16.20 | 1.50 | | | 6 |
| Average | | 695 | 17.53 | 1.04 | | | 758 | 17.03 | 1.73 | | | |
| Buho patient. | 1 | 900 | 23.22 | 1.47 | .429 | | 880 | 23.76 | 1.58 | .450 | 4.3 | 3 |
| | 2 | 1185 | 23.80 | 1.89 | .300 | | 850 | 22.20 | 1.51 | .480 | 5.2 | 4 |
| | | | | | | | 910 | 24.50 | 1 54 | .500 | 4.5 | 5 |
| Average | | 1042 | 23.51 | 1.68 | .354 | | 880 | 23.48 | 1.52 | .476 | 4.6 | |
| Polyuria patient. | 1 | 9850 | 26.80 | 1.90 | | | 10700 | 27.03 | 3.75 | | | 4 |
| | 2 | 8500 | 29.50 | 2.00 | | | 8640 | 28.12 | 3.20 | | | 5 |
| | 3 | 11670 | 27.04 | 1.97 | | | 9945 | 30.12 | 3.80 | | | 6 |
| Average | | 9990 | 27.78 | 1.95 | | | 9762 | 28.42 | 3 58 | | | |
| Cancer patient, No. 2, æt. 30. | 1 | 1050 | 20 01 | 1.80 | .570 | 2 | 1160 | 21.75 | 1.95 | .047 | 3.4 | 4 |
| | 2 | 1120 | 19 70 | 1.49 | .585 | 2.3 | 940 | 21.08 | 2.30 | .021 | 2.9 | 5 |
| | 3 | 1010 | 20.50 | 1.60 | .600 | 1.9 | 1090 | 20 20 | 2.97 | none | 4.0 | 6 |
| | | | | | | | 1025 | 22.00 | 2.14 | .050 | 3.6 | 7 |
| Average | | 1060 | 20.07 | 1.63 | .585 | 2 | 1053 | 21.25 | 2.24 | .029 | 3.5 | |
| Healthy man. | 1 | 1500 | 31.42 | 2.70 | .530 | | 1450 | 33.27 | 3.19 | ? | | 3 |
| | 2 | 1430 | 31.99 | 3.11 | .601 | | 1930 | 33 93 | 2.89 | ? | | 4 |
| Average | | 1465 | 31.70 | 2 90 | .565 | | 1690 | 33.60 | 3.04 | | | |

We can say but little for the success of carbol as an internal remedy, and, although we have tried it in a variety of affections, we have seen good results in only one or two. The medical journals, however, teem with cases of its successful internal administration. Scarlet fever, measles, smallpox, typhoid, and malarial fevers, and even phthisis and syphilis, have received—as it is alleged—checks from its use in this way.

In the first place, we may call attention to the cases in which Lemaire has used it. The detail of these cases occupies more than one-third of his work, but with the exception of those cases in which the carbol was used as a local agent to subdue inflammation, or to destroy a parasite of the skin, his results seem fanciful, or unimportant. Sansom has given a table of cases in which "sulpho-carbolate of soda" was used in typhoid fever.

His results, taken at the very best, are not favourable, for out of twenty-four cases he had three deaths, or a little over twelve per cent., a low, but by no means unusually low, mortality. But, on examining the table closely, it will be found that no less than nine of these cases were under the age of ten years. These should have been excluded (for typhoid, practically, has no mortality under this age), so that we get three deaths in fifteen cases—one in five,—or twenty per cent., a mortality above the average. The table then proves nothing. Pecholier, of Montpelier, reports on sixty cases of typhoid treated by (carbol ?) creasote. He asserts that it hastens recovery, provided it is given in doses of three drops from the very commencement of the disease, whilst in those cases in which the treatment was commenced after the disease had made progress, it was of no avail. M. Pecholier started out with the theory that in typhoid there is present,[1] as a cause, an organized ferment to be killed. He believed that carbol would kill the ferment, and so cure the disease. Is the judgment of a man thus prejudiced to expect a particular result trustworthy, for the consideration and discrimination of results of treatment in typhoid fever, in which the mortality is so variable and dependent on so many different circumstances?

Freulich reports eight cases of inveterate intermittent with enlarged spleen, treated successfully by a total medication of four and an eighth grains of carbol! (*New York Medical Journal*, from *Wien Med. Pres.* xii., 1867.) Drs. Barrant and Tessier, at the Mauritius, have used carbol in grain doses thrice daily in intermittents. The results compare favourably with quinia. They also employed hypoderms one grain to thirty minims. (*Lancet*, May, 1869, p. 279.)

Dr. Fuller, of St. George's Hospital, London, prefers carbol to creasote in the treatment of diarrhœa.

It has been extensively used in a pulverized form as an inhalation in phthisis, and has even acquired a popular reputation in this way. We have failed to derive the slightest benefit from it in several cases, all in the suppurative stage, beyond what the same amount of steam might have produced.

In chronic rheumatism, given in sheer desperation after the failure of every remedy, we can report five unsuccessful cases.

It is worse than useless in gonorrhœa, and seems to aggravate nasal catarrh, according to our experience.

It has been used as an injection in ascarides, but its employment is fraught with danger, as Lemaire has shown.

It is used extensively in Hebra's wards, and has been especially serviceable in psoriasis, pityriasis, and pityriasis rubra, as a *curative* agent. It is given in pills. The dose is six to ten grains gradually increased to twenty or even to sixty grains in the day. The smoky urine after this use of carbol has not been noticed. (Quoted in *Am. Journ. Med. Sci.* for April, 1870, from *Arch. für Dermatologie und Syphilis.*) Employed externally we have never failed to afford relief to the itching of urticaria, eczema, and psoriasis, and we believe that it would not fail in true prurigo. Usually, we order a simple wash of 2 per cent. carbol solution. If, however, there are open sores, such as we find in the eczema succeeding an ulceration of the veins of the leg, then oily applications are better, and we use carbolized oil 1 : 10 on rags, with oiled silk over all. We would say more on this subject if it would render our statements of any more force. We use carbol in every skin disease where itching is complained of, and we have not seen it fail to relieve this symptom. We may state here that we have not seen any constitutional effects from carbol used for this purpose, and in the manner indicated. Its use as a parasiticide requires much caution, owing to the amount and thoroughness of the application required. It has been proved by numerous observations that carbol is really absorbed through the skin, and if thrown, *as carbol*, directly on the great nerve-centre, the effects may readily be disastrous. There is no doubt, from cases recorded by Lemaire, Sansom, and others, that grave constitutional mischief is sometimes occasioned even by its application to a limited surface, or to a small wound.

---

[1] Quoted from Gazette Hebdomadaire, xiii., 1869, in Half-Yearly Abstract Med. Sci. for July, 1869.

Carbol has been used in cancer, and reported well on. Dr. F. A. Burrall, of New York, has reported[1] a case of mammary schirrhus, remarkable for its successful treatment by the internal use of carbol. The diagnosis was made with care, and was assured by the concurrence of several surgeons. The tumour was ulcerated, the seat of frequent hemorrhages, and was discharging fetid pus. The patient's general state was cachectic. Carbol lotions had previously been used, but without benefit. The patient was placed upon quinia, and carbol in four-drop doses thrice daily. No change took place for two months save that the pain was mitigated. At the end of this time the tumour began to soften, the ulcers to heal, and at the expiration of six weeks she was again at her work as a washerwoman—the tumour not gone entirely but practically removed. Lemaire records a case of epithelioma healing quickly under the external use of carbol, p. 491, and a second in the practice of M. Gonel, also healing by its external use, p. 493. At p. 494 he records an unsuccessful use of the remedy in the same disease, although the pain was ameliorated, and in the same place he quotes Dr. Declat to the effect that the remedy internally and locally had benefited, if it had not cured, a case of cancer of the tongue. He records four or five other cases of cancer (scirrhus) in which carbol, externally applied, gave great relief: he does not seem to have used it internally.

---

[1] Medical Record for November, 1869.

We have treated four cases of cancer with the remedy.

The first in an old man from whom we had removed an epithelioma of the lower lip. The disease returned in the cicatrix. Circumstances forbade a second operation. We placed him on sixteen grains of carbol (in divided doses) a day, and kept up the treatment for forty-nine days. At the end of this period it was found that the disease had quite disappeared. In this case the treatment by carbol was continued, for precaution sake, until the man began to lose flesh and muscular strength. Tonics were then substituted. This occurred in 1869, and the man has not been since troubled with his complaint.

The second of our cases was also epithelioma. We had twice excised parts of the lower lip, the last time using carbol locally as an anæsthetic. After the second operation the parts healed almost by the first intention, so rapidly indeed that the sutures were with difficulty removed. The parts remained sound for a while, but at length became the seat of one or two hard, wart-like ulcers, the source of sharp pain. Carbol was given internally in doses of fifteen grains a day. The ulcers healed, the nodules vanished, and with them the pain. The man has had no return of his disease.

The third case was one of encephaloid of the neck, which ultimately increased to an enormous size, involving every tissue between the skull and the thorax. The man of course suffered greatly. In the earlier stages of the disease, carbol in five-grain doses, thrice daily, arrested its progress, and greatly assuaged the pain. But the loss of flesh and strength was so great under its use that it was necessary frequently to suspend its administration, and in these intervals the disease made up for lost time. Finally carbol seemed to have no effect whatever, and only the most prodigious doses of opium and chloral gave ease. The man died from the immediate effects of these two remedies (comatose) which he was allowed to use *ad libitum*. Our lack of success in our later administration of carbol in this case may have arisen from the fact that we employed glycerine as the menstruum, hoping it would be better tolerated by the stomach. Lemaire has shown that glycerine diminishes the effects of carbol.

The fourth case, rodent ulcer of the lower lip and chin, is yet under treatment, but with very promising results. The ulcer, from the size and shape of a tablespoon bowl, has contracted to the diameter of a half-dollar, and granulations still rapidly coming forward. The pain left at once, and the swelling of the glands under the jaw in a few days after the commencement of the treatment. The discharge, which smelt horribly, has disappeared altogether. This man used carbol locally, 5 per cent. solution, and internally five grains four times a day. It has not affected his health in any way as yet, although he has taken it for nearly a month.

For dispensing, carbol can be most conveniently kept in the liquid state. A very small quantity of water added to melted carbol will prevent its return to the crystalline form at ordinary temperature. A minim of carbol thus liquefied corresponds almost exactly to a grain—one fluidrachm weighs sixty-one and three-quarter grains. In our opinion this should be the officinal "carbolic acid" of the U. S. Pharmacopœia. Carbol should not be given in a stronger solution than three grains to the fluidounce of water. As before noticed, in Vienna it is given in pills. It is hardly necessary to observe that these should be freshly prepared. Possibly the albuminous jelly described on p. 26 might be found useful. It is in preparing carbol for external use that the pharmaceutist will find most need of skill. We prefer as a solvent for carbol in surgery perfectly sweet salad or lard oil. We keep an oil composed of equal parts of carbol and sweet oil as stock. This is labelled "normal carbol oil," and for external use is quite as strong as can ever be justifiable. In prescribing compounds of lesser strength we write simply Carbol ol. 1 : 10, *i. e.* two parts of normal carbol ol. and eight of sweet oil, containing, therefore, in ten parts nine parts of oil and one of carbol, by measure. If cerate is wanted all that is necessary is to substitute melted wax, free from paraffine (in which carbol is insoluble) for oil, and stir the mixture until it is stiff. Normal carbol oil is coloured red with alkanet to prevent mistakes.

Carbolized collodion should be prepared in small quantity at a time. That long kept is irritating, possibly from presence of picric acid.

Carbol can scarcely be called a poison, although several deaths from its reckless use are on record. It seems to be more obnoxious to some individuals than to others, and, as a rule, badly borne by children, just as with alcohol. Indeed, it has been noticed by some one (the authority escaping our memory) that those who have been accustomed to alcohol—as spirits—and therefore insusceptible to it, are likewise insusceptible to carbol. Two persons died from the use of carbol as a general wash to the surface of the body, in the Aston work-house at Birmingham. The crude liquefied acid was the preparation used. A third person, similarly treated, recovered, which ought to be proof that carbol is *not* a poison. (Machin, *British Medical Journal*, 1868.) Lemaire records its constitutional effects from its local application in six cases of lepra. He nearly lost a child by a very dilute injection to dislodge ascarides. We have used carbol a great deal externally, as an anæsthetic, in skin diseases, neuralgia, and the like, as well as for the preventing of inflammation in wounds, not in adults alone, but in children also, and we have not seen a solitary case where it manifested a poisonous tendency. We doubt not that the cases of the judicious use of carbol locally attended with unpleasant general symptoms were instances of idiosyncrasy. It may be admitted that the external use of carbol presents greater elements of danger than the internal; for, if the solution be strong, and extensively applied, we may have a kind of shock arising from the excessive impression made on the periphery of the nervous system, as in extensive burns. But, besides this, it is worthy of consideration, if liver and lungs may not act as destroyers of carbol when taken internally, so that even excessive doses are scarcely felt at all if dilute, whilst, when applied externally, it may be carried direct to the nerve centres as carbol, and kill by direct action on these. Internally, carbol can hardly be called a poison. It is probable that a five per cent. solution would kill, but the action would be a purely mechanical one, like that of caustic potash. The five per cent. carbol solution, if diluted, would be as innocuous as dilute potash solution.

As antidotes to the caustic effects of carbol taken into the stomach, oil and glycerine have been recommended on the theoretical grounds that both these substances impair the action of carbol. It is further an advantage that one or the other of these substances is almost always at hand. We should have more confidence in rotten albumen—as, addled egg—but this might not be easily obtained. To combat the effects of carbol after its absorption, our main reliance should be on the judicious use of alcohol as a nerve stimulant.

The question of the toxic power of carbol would naturally lead us to consider the action of carbol on fungi, etc., and its power to arrest fermentation. The subject, however, is too extensive for our remaining space to admit of discussion, and, besides, such a discussion would involve questions connected with the germ theory of disease, quite as much as with carbol. This is ground we have endeavoured, when possible, to shun in the paper now concluded.

From the facts laid before the reader, we think that the conclusions are justified—

1. It is not proven that carbol is a general disinfectant.
2. It is of the greatest use to disinfect wounds.
3. It accomplishes this (*a*) by destroying pus, etc.; (*b*) by preventing inflammation.
4. Its use in wounds moderates pain.
5. Its use on the skin relieves itching, and produces an anæsthesia sufficient for minor cutting operations.
6. It seems to be of use internally, in certain cases, in scaly skin diseases, and at least as a moderator of pain in cancer.
7. It has not proved of decided use in other diseases.

Fort Vancouver, W. T., December 1, 1871.

## Art. II.—*Clinical Observations on Pelvic Peritonitis and Peri-uterine Cellulitis.* By James L. Brown, M.D., Physician to Out-door Department of Woman's Hospital, New York; Physician to Demilt Dispensary; Assistant Physician to Strangers' Hospital, etc.

That the uterus and its appendages, in common with other parts of the economy, are liable to become the seat of inflammation and abscess, and that such inflammation and abscess appear to be for the most part connected with the puerperal state, are facts that have been observed and recorded as far back as the history of medical science extends. Beyond this general knowledge of a very obvious affection, however, it may safely be stated that almost nothing was known of the inflammatory disorders of the peri-uterine tissues prior to the beginning of the present century. Indeed, without much violence to historical accuracy it may be affirmed that nearly all that is now known with any precision of these ailments has been ascertained within the last thirty years. Isolated facts had, indeed, been observed and recorded by different medical writers as far back as Morgagni in the early part of the last century, but no systematic study of the peri-uterine inflammations can be said to have been undertaken before the year 1840. I am aware that Simpson and others claim for the ancients a very considerable and tolerably exact knowledge of these diseases, but I am of the opinion, that no one who will take the trouble to read the passage in Aëtius, referred to by Simpson in his article on pelvic cellulitis, will find in it a justification of the statement that it contains "a full and distinct account," or indeed any account at all, of the affections under consideration. I repeat, then, that neither in ancient nor in modern times, so far as we have any means of knowing, were these affections made the subject of special study until about the year 1840. Of the progress that has been made since that time accounts more or less complete are to be found in nearly all of the more recent treatises on diseases of women. I shall make no apology, therefore, for omitting historical details that are so readily accessible, and shall confine myself in this paper chiefly to some clinical remarks based upon the observations of 87 cases, of which I have taken notes, and upon impressions received from a considerably larger number, of which no record has been kept.

As it is not my purpose to attempt any full or extended description of the peri-uterine inflammations, the subject being altogether too large to be adequately discussed within the limits to which I am necessarily restricted in a paper of this kind, but merely to invite attention to certain points that have seemed to me to be of peculiar interest, and on which it is very desirable that the light of further clinical experience should be thrown, I shall not restrict myself to any systematic treatment of the subject, but deal with it in a somewhat desultory manner, passing lightly over many interesting topics and dwelling upon others that are of no more real consequence perhaps, but which may have proved more interesting in my own experience, or to which I may have given more especial attention. Of a class of affections that have only so recently been made the subject of investigation it is not surprising that our knowledge should still be very imperfect; that much difference of opinion among observers should exist on many points; and that what *is* known about them should be mostly confined to those especially engaged in studying or treating the diseases to which they are allied. Believing that these affections are far more frequent than is generally supposed, being often mistaken for other conditions and consequently subjected to inappropriate treatment, and believing, moreover, that they are of great practical interest to the general practitioner as well as to those more particularly engaged in the treatment of diseases peculiar to women, I have thought that any contribution tending to throw light upon them and to lead to a better appreciation of their frequency and importance might prove interesting and perhaps profitable.

*Synonyms.*—The affections to which I have alluded are variously described by different authors as pelvic abscess, pelvic cellulitis, inflammation of the uterine appendages, inflammation of the broad ligaments, peri-uterine inflammation, peri-metritis, para-metritis, peri-uterine phlegmon, peri-uterine cellulitis, pelvic peritonitis, etc. Some of these expressions, it will be noticed, not only serve as names, but indicate theories. Pelvic abscess, for instance, suggests the idea of suppuration as the most noticeable feature in these affections. Inflammation of the uterine appendages is exclusive, shutting out all the inflammatory affections of the pelvis, save those which it mentions. Pelvic cellulitis and pelvic peritonitis locate the disease, each, in a particular tissue, while the use of the term peri-uterine inflammation implies a disinclination to be committed to any theory as to the precise seat of the inflammatory action. We thus find in the very nomenclature of these diseases evidences of a conflict of opinion as to their seat, their nature, and their tendencies. Passing now from the nomenclature to the definitions given by different authors, we meet with a corresponding want of agreement. Selecting from a few, only, we find, for example, the following account in Simpson's article on pelvic cellulitis:—

*Definitions.*—"Between the layers of the broad ligaments, between the vagina and the rectum, between the iliac muscle and the bone, and, in short, in almost every part of the pelvis, there is an abundance—a great abundance—of cellular tissue; and this disease consists of inflammation, acute or subacute, of this abounding cellular tissue."

West speaks of it as an inflammation

"which, though most frequently involving the cellular tissue between the folds of the broad ligaments, sometimes attacks that which intervenes between the womb and the adjacent viscera, or extends to that lining the pelvic walls, or even to that which lies between the outer surface of the peritoneum and the abdominal muscles. * * * The cellular tissue anywhere in the neighbourhood of the womb may be the seat of the mischief, though that contained in the folds of the broad ligaments is attacked far more often than the same structure in any other situation."

McClintock makes the following statement:—

> "In regard to its seat, it may affect almost any part of the cellular tissue adjacent to the uterus. Thus I have seen it most frequently in the broad ligament, at least so far as I could judge; in the iliac fossa; between the bladder and the abdominal parietes; between the uterus and the rectum; and in every part of the connective tissue around the neck of the womb."

Graily Hewitt defines it to be essentially an

> "effusion of morbid products into the space surrounding the uterus and ovaries, and the transformations undergone by these effused matters. The actual seat of the effusion is, in most cases, the meshes of the cellular tissue surrounding the uterus, between the folds of the broad ligament and extending thence in various directions towards the pelvic walls; but it is probable that in some cases of pelvic inflammation there is an inflammatory condition of the peritoneum itself."

Scanzoni makes no allusion whatever to inflammation of the pelvic cellular tissue, and devotes but a single page to the description of perimetritis, which he considers to be most frequently a puerperal disease, but occasionally a secondary affection "accompanying an acute or chronic inflammation of the uterus or the ovaries, or one of the various neoplasmata which are developed in these organs."

His account of it is so very meagre as to be of very little practical value. Nonat, who may in some measure be regarded as the French representative of the views most prevalent among English gynæcologists, locates the inflammation chiefly in the cellular tissue, describing it under the name peri-uterine phlegmon, of which he makes four varieties, viz: "the lateral phlegmon," "the phlegmon of the broad ligaments," "the retro-uterine phlegmon," and "the ante-uterine phlegmon." The lateral phlegmons differ from those of the broad ligaments (which of necessity are also lateral) in being in such close contact with the uterus as to seem to make a part of it. Previously to the researches of Nonat, this close proximity to the womb had caused them to be regarded as due to partial parenchymatous metritis. Although Nonat does not deny the occasional occurrence of pelvic-peritonitis either as a complication of peri-uterine phlegmon, or independently of it, he gives no account of it as a distinct affection, and indeed barely alludes to it. Bernutz, on the contrary, takes a position directly opposite to that of Nonat, and after proving to his own satisfaction that peri-uterine phlegmon is anatomically impossible, he proceeds to show that the signs and symptoms supposed to characterize that condition may all be caused by pelvic-peritonitis, without any implication whatever of the cellular tissue; and in his opinion they always *are* so caused. He sustains his position by the evidence of several autopsies. I give an abstract of his views in his own words:—

> "The slightest dissection shows that the cellular tissue subjacent to the peritoneum is so thin and scanty that it is impossible to separate the serous from

the uterine tissue; and that consequently it cannot be the seat of swellings, which, according to M. Nonat's observations, attain in the space of a few hours to the size of a hen's egg. * * * It is, therefore, anatomically impossible that the tumours which M. Nonat called uterine-latero-phlegmons, and which are quite distinct from phlegmons of the broad ligaments, can be situate in the cellular tissue of the lateral parts of the womb. * * * From all these facts I have concluded that cases of supposed peri-uterine phlegmons ought to be classed with those of partial peritonitis."

Thus we find Bernutz claiming for peritonitis precisely what Nonat claims for cellulitis, and although he does not deny the existence of the cellular inflammations, he gives no account of them and treats only of pelvic peritonitis. Aran adopts the term peri-uterine inflammation, and says of it: "I propose under this name to describe an affection that has by turns received the denomination of inflammation of the lower belly, inflammation of the appendages of the uterus and of the broad ligaments, inflammation of the pelvic cellular tissue, and pelvic peritonitis." Courty also adopts the term peri-uterine inflammation, which he says is preferable to any other name precisely because it comprehends all the others and prejudges nothing as to the seat of the malady. Thus far, then, we find the English writers regarding these diseases as essentially inflammatory affections of the cellular tissue, the peritoneum being occasionally involved. In France we have Nonat treating of cellulitis as the principal affection, Bernutz controverting this theory and substituting peritonitis for cellulitis, while Aran, Courty, and others resort to the term peri-uterine inflammation expressly to avoid committing themselves to either theory. It does not appear to have occurred to any one prior to the year 1868 to dissociate these diseases entirely and to assign to each its proper position as an independent affection, having no more necessary connection with the other than has pleurisy with pneumonia. Bernutz, it is true, in treating of pelvic peritonitis differentiates it from phlegmons of the iliac fossa, in which he erroneously includes cellulitis of the broad ligaments, but he is so intent on convicting Nonat of error, that he barely recognizes cellulitis and gives it no further consideration. Virchow, also, makes a pathological distinction between these two affections, giving the name perimetritis to the peritoneal inflammation, and para-metritis to that of the cellular tissue; but no clinical separation of them is to be found in any systematic treatise on diseases of women, that I am aware of, earlier than the date I have mentioned. The first distinct enunciation of the fact that they are entirely separate affections, and can generally be distinguished from each other clinically, I find in Dr. Thomas's treatise on Diseases of Women first published in the beginning of the year 1868. The two diseases are therein described separately, each with its own history, etiology, symptoms, and diagnostic features. This distinction once made, it becomes a matter of surprise that it should not have been made sooner. That partial or local peritonitis is of common occurrence has long been known—that inflammation and abscess of the cellular tissue are also frequent affections has been equally well known; that they should have been so long confounded in this locality has probably been due to the incompleteness of our observations, the inadequacy of our means of diagnosis, and the infrequency of opportunities to confirm or correct a diagnosis by post-mortem examination, these diseases rarely proving fatal. Nearly a year after the appearance of Dr. Thomas's book, Dr. Matthews Duncan published his monograph on peri-metritis and para-metritis, which is by far the most complete exposition of what is known of these diseases that has yet been put forth. He not only recognizes cellulitis and peritonitis as independent affections, but subdivides each into varieties of which he treats at considerable length. "These affections," he says, "are surpassed in importance by none of the diseases of women; they are common, painful, and dangerous both to functional perfection of the parts implicated and to the life of the sufferer from any of them." By peri-metritis, he means inflammation of the uterine peritoneum; by para-metritis, inflammation of the cellular tissue in connection with the uterus. Of this nomenclature, which he takes from Virchow, I would observe in passing, that, while the term peri-metritis is unobjectionable, its meaning being obvious enough, and sufficiently precise, the term parà-metritis requires to be explained, and is, therefore, inferior to peri-uterine cellulitis, which explàins itself, and which he rejects because of its hybrid etymology. The substitution of the word peri-metric for peri-uterine might avoid offence to the etymologist and enable us to retain a name that indicates the seat and nature of the malady. Coming now to the clinical consideration of these diseases, and accepting the fact which is everywhere admitted that the inflammation sometimes attacks the peritoneum, and at others the cellular tissue, almost the first question that confronts us is this: Have we any means of determining in a given case which of these tissues is the seat of the disease?

Dr. Thomas says of peritonitis and cellulitis, "that they may usually be readily differentiated from each other, and a neglect of the effort at such thorough diagnosis is as reprehensible as a similar want of care in determining between pericarditis and endocarditis." Matthews Duncan thinks otherwise. He says of the diagnosis of these affections from each other, that "it is still in a very unsatisfactory state." That, "while the very existence of the various affections is still, in some quarters at least, regarded as an open question, there must surely be at least difficulty of diagnosis to justify doubt." He quotes the tabular statement in which Dr. Thomas contrasts the distinguishing characteristics of the two diseases, merely to express his dissent from it as a whole, and in its several parts, and then proceeds to say:—

> "I shall in the mean time only say that we are indebted to Thomas for even attempting the difficult task, and that I shall not attempt to supplant his diagnosis by one of my own. I have often felt satisfied, from careful observation of a case, at many stages of its progress, that I could make a good guess as to the peri-metric or para-metric nature of an abscess. The indications that Thomas

lays down show the kind of indications that I have relied upon. I am not, however, prepared to state them categorically."

From this it would appear, that he regards the cases in which a differential diagnosis can be made as exceptional, but that the indications given by Dr. Thomas are, in the main, correct. For my own part, while I am less confident than Dr. Thomas, I am by no means so doubtful as Matthews Duncan. In about two-thirds of all the cases that have come under my observation, I have thought the diagnosis clear enough to be susceptible of demonstration; the element of doubt, however, has entered very largely into the other third. I should state that most of my cases have been seen among out-door patients coming to the Demilt Dispensary, the Woman's Hospital, and the Clinic for Diseases of Women at the College of Physicians and Surgeons. They were, therefore, nearly all subacute or chronic cases. The acute cases that I have seen have been comparatively few in number, and have occurred mostly in private practice.

Entertaining the belief that subacute and chronic cases will always form the majority of these affections in general practice, I shall invert the usual order of sequence and speak of them first, beginning with the physical signs on which we must chiefly depend for diagnosis, there being nothing in the symptoms sufficiently distinctive.

The uterus, as is well known, possesses a considerable degree of mobility. It may be drawn down to the vaginal outlet, it may be pushed high up in the pelvis, and it may be forced to either side. In women who are not too fat, or who have not an unusual rigidity of the abdominal muscles, that is to say, in the majority of women, the uterus may be distinctly felt through the abdominal walls by making pressure above the pubes with one hand, while counter-pressure is made in the vagina with the index finger of the other hand. It may be thus included between the two hands, and its size, shape, position, and degree of mobility determined with great accuracy.

*Signs and Symptoms of Subacute Cases.*—Now, one of the first and the most constant of the effects of pelvic peritonitis in any of its severer forms, is to impair or abolish this mobility. The finger in the vagina impinges on the uterus, but can neither push it up, nor draw it down, nor move it to either side. There is fixation, more or less complete. Not only is there immobility of the uterus, but there is hardness and rigidity of the whole vaginal roof. Whether the finger be carried behind the cervix, or in front, or on either side of it, it meets with a firm resistance of almost cartilaginous density. Occasionally this hardness may not entirely surround the cervix, but in severe cases it nearly always does. In the milder attacks the induration of the pelvic roof may be slight in degree, limited in extent, or entirely absent, but there is always some fixation of the uterus. There is, moreover, almost invariably, some displacement of this organ. It may be flexed backwards or forwards, it may be anteverted or retroverted, or drawn to either side, but a deviation of some kind almost always exists;

and the uterus is held in its abnormal position by adhesions. There is, too, in a comparatively small number of cases, a distinct tumour to be felt, located most commonly behind the cervix, in the posterior cul-de-sac, but occasionally on one side and in close proximity to the uterus. This tumour can rarely be felt through the abdominal walls, and is usually to be detected only in the vagina. These constitute all the physical signs of pelvic peritonitis, as it is seen in subacute and chronic cases, and they may be briefly summed up as follows: Displacement and fixation of the uterus, hardness of the vaginal roof, and the occasional existence of a tumour in such close proximity to the uterus as to appear to be a part of it.

Let us now consider the physical signs of cellulitis of a subacute or chronic character. In examining a case of this kind the most prominent abnormality that we find, and that which is most likely first to arrest attention, is the existence of a tumour, usually on one side of the uterus and in about the situation of the broad ligament. This tumour, in many cases, feels to the touch not unlike the body of the uterus drawn to one side and fixed there; for it is often no larger in size and not dissimilar in shape. Much less frequently the tumour may be felt posteriorly, and in some instances a tumour may be found on each side of the womb. These cases, however, are exceptional. The tumour is nearly always immovable, and can almost invariably be felt through the abdominal walls when firm pressure is made. The mobility of the uterus is generally diminished, but there is no such fixation as occurs in peritonitis unless that disease complicates the cellulitis. In a considerable number of cases there is no impairment whatever of its mobility. There is usually no induration of the pelvic roof unless in the immediate vicinity of the exudation, and commonly not even there. As a rule, the uterus suffers little or no displacement, and when displaced is not fixed in its abnormal position. These are all the physical signs of cellulitis: let us contrast them with those of peritonitis.

In peritonitis we have displacement and fixation of the uterus, diffused hardness of the pelvic roof, and commonly no tumour. In cellulitis we have always a tumour, generally on one side of the uterus, little or no hardness of the pelvic roof, and not much displacement or fixation. There would appear to be sufficient dissimilarity here on which to base a differential diagnosis, and in typical cases I think such a diagnosis can always be made; but, unfortunately, all cases are not typical. Peritonitis is a very frequent complication of cellulitis, and occasionally cellulitis is sufficiently diffuse to resemble very closely peritonitis. The question might here be asked: what evidence is there that the physical signs just given are distinctive of these affections even in typical cases? To such a question I would answer that the evidence is of two kinds, direct and inferential.

Evidence of the first kind is afforded by autopsies of subjects dying while suffering from these affections in whom the lesions discovered after death are such as correspond with the signs that I have mentioned. For example, the most carefully observed cases of this kind that I have been able to find are those of Bernutz, which were all cases of peritonitis, and were published by him for the express purpose of showing how constantly this affection has been mistaken for cellulitis, and how very grievously Nonat had erred in this respect: consequently they were cases in which the question of differential diagnosis received the most careful attention. Now the two most prominent physical signs of pelvic peritonitis that I have mentioned are displacement and fixation of the uterus, and these were found in every one of Bernutz's autopsies. He says but little of hardness of the pelvic roof, and the presence of a tumour is the rule in his cases, and not, as I have stated it, the exception. But as all of these cases were of that very exceptional variety of pelvic peritonitis in which suppuration takes place, and forms an encysted tumour, they constitute just that class of rare cases that I have referred to as sometimes giving a tumour, and in which hardness of the pelvic roof would not be likely to be a prominent feature. In fact, Bernutz himself calls attention to the great rarity of suppuration in pelvic peritonitis.

The second kind of evidence is in reality nothing more than a corollary of the first; for if in examining any given case a tumour be found in the vicinity of the uterus without displacement and fixation of that organ, then we may infer that that tumour is not due to peritonitis. Moreover, both clinical and necropsic observations have shown that the adhesions of peritonitis are very persistent unless removed by pregnancy, while the tumours due to cellulitis are more commonly of only temporary duration, often disappearing entirely in a few weeks.

Let us now see how far the symptoms may aid us when the physical signs leave us in doubt. I have already intimated that these are almost never sufficient of themselves, but they may occasionally afford us some assistance. I would remark, then, in the first place, that, in a very considerable number of subacute and chronic cases, perhaps in one-half, the symptoms are so slight, or have so little reference to any inflammatory condition, that they do not point to these affections at all. It is a very common circumstance to be consulted by patients on account of dysmenorrhœa, or irritability of the bladder, or suppression of the menses, or metrorrhagia, and find on examination evidences of extensive cellulitis or peritonitis of which no history can be given by the patients. They cannot remember to have suffered from any illness to which they could be ascribed.

In other cases, however, the history and symptoms are sufficiently well marked. The one symptom that is most prominent in both affections is *pain* in or about the pelvis. This pain is sometimes referred to one or the other iliac fossa, sometimes to the supra-pubic region, and sometimes to the back. Occasionally it shoots down the thigh, and may even cause retraction of the limb. There is nothing in this symptom on which we can predicate with any certainty which affection we are dealing with. I may be stated, however, that pain confined to one side or shooting dow one thigh, more frequently attends cellulitis, while pain of a paroxysma character is oftener peritoneal. Retraction of the thigh is almost alway the result of cellulitis. In the functional disturbances of the ovaries, uterus, bladder, and rectum there is nothing that is distinctive of either affection.

*Frequency of Suppuration.*—Suppuration, when it exists, is in most cases due to cellulitis. I say *when it exists*, for in my experience it is of far less frequent occurrence than we would be led to suppose from the statements of most authors on this point. For example; West says: "The tendency to suppuration and to the discharge of pus seems to be very great, since it occurred in 27 out of 52 instances. This mode of termination of the inflammation appears, also, to be as frequent in cases independent of previous delivery or miscarriage, as in those which are due to puerperal causes, since it happened in 9 out of 15 intances of the former kind, as well as in 18 out of 37 of the latter." McClintock states: "As regards the frequency of abscess in puerperal cellulitis, my clinical records show the following results. Of 70 cases, 37 ended in suppuration, with discharge of pus, and 24 of these burst, or were opened externally." He gives no estimate of its comparative frequency in non-puerperal subjects, although one of his two chapters is devoted exclusively to this class of cases. Simpson was of opinion that suppuration occurs in about one-half of all the cases. Bennett regards suppuration as the more frequent termination, as did also Grisolle, and some others of the French writers. Duncan gives it as his opinion, that suppuration in these cases is even more frequent than the statements of any of these authors would lead us to suppose. Dr. Thomas, on the contrary, says: "Cellulitis proper, that is, uncomplicated by other diseases, rarely passes into a chronic state, but usually, in the course of two or three weeks, passes off by resolution, or ends in suppuration, the former being much the more frequent termination;" and yet, in his tabular synopsis he gives a tendency to suppuration as one of the distinctive characteristics of cellulitis. Nonat states that suppuration, which has been regarded as a very common termination by most physicians, is in reality very rare, when the cellulitis has been subjected to proper treatment. Gallard met with it only 4 times in 53 non-puerperal cases. Aran's experience agrees with that of Gallard, and Courty is of the same opinion as Aran.

I have dwelt somewhat upon this question of suppuration, because I consider it an important one, and because this discrepancy in opinion and statement seems to me to be very significant. This is a question, not of theory, but of fact; how then are we to explain such contradictory statements on the part of capable and conscientious observers? I think the solution is to be found in the circumstance to which allusion has already been made, that a large proportion of cases are attended with so few or such slight symptoms at the outset, that they escape notice, and are only detected, if detected at all, when some subsequent ailment or functional disturbance causes investigation; while, on the contrary, every case of sufficient severity to result in suppuration must almost inevitably challenge attention.

Nearly every author to whom I have referred bases his opinions or statistics on cases observed in hospital practice. Now, among puerperal patients, all suppurative cases would almost certainly be reckoned, while the milder cases might easily escape detection; and the same result would obtain among non-puerperal patients. Among out-door patients, however, the case would be different. They almost always seek advice on account of some local pain or functional derangement that necessitates a careful examination, and among these, evidences of cellulitis and peritonitis could scarcely escape observation, and, indeed, are commonly found where the history given by the patient would never have led us to suspect their existence. I am aware of a possible source of error here, in the fact that suppuration may occur, and the pus be discharged through the rectum or bladder without the patient's knowledge, but after making all due allowance for cases of this kind, suppuration must still be regarded as quite an exceptional occurrence. Among my own cases, it occurred 3 times in 49 cases of cellulitis, and once in 16 cases of peritonitis. I believe I have now mentioned all the symptoms that are of any value, and I think it is obvious enough that they are insufficient of themselves for a diagnosis.

*Signs and Symptoms of Acute Cases.*—Leaving now the consideration of subacute and chronic cases, let us see if we can do any better, or as well, with acute cases. Speaking from a comparatively small experience, extending to only nine recorded cases of cellulitis and seven of peritonitis, I should answer, *not so well*, at least in the early stages, by which I mean the first four or five days of the disease. In cases of this kind, the symptoms become rather more valuable, and the physical signs rather less so. With the symptoms of peritonitis we are all sufficiently familiar, and pelvic peritonitis differs from general peritonitis only in being less severe and more localized; that is to say, we have the same pain, fever, nausea and vomiting, dorsal decubitus, anxiety of countenance, etc., but the tenderness and pain are chiefly in the hypogastrium and pelvis; tympanites is either entirely absent, or slight in degree, and there is more commonly functional disturbance of the pelvic viscera. Now, in cellulitis we have also pain and tenderness in the hypogastrium, fever, sometimes, but less commonly gastric disturbance and interference with the functions of the bladder and rectum. There is certainly no great difference here, and yet in a considerable number of cases there is such a difference in the physiognomy of the two affections as would enable an experienced observer to form a pretty correct judgment from the symptoms alone. The physic signs are somewhat better marked, but are by no means so distinctive a in subacute and chronic cases. In peritonitis, physical examination usuall reveals nothing during the first five or six days, but tenderness when th uterus or pelvic roof is touched, and pain on hypogastric pressure. Afte this, there begins to be a general hardness of the pelvic roof, with fixatio of the uterus, and if there be any distinct tumour, it will be found mos frequently in the posterior cul-de-sac. In cellulitis, on the other hand besides pain and tenderness when the uterus and roof of the pelvis ar touched, there is also, very early, a feeling of fulness which is commonly more pronounced on one or the other side of the uterus; not a well-defined tumefaction, such as occurs later, but an œdematous sort of swelling which may resolve into a distinct tumour in two or three days, or only after the lapse of a week. These differences, slight as they are, are the only ones, I think, that clinical experience has thus far enabled us to point out.

Another question might here be raised, and in fact *has* been raised, as to whether there is any practical advantage to be derived from the differentiation of these affections, even assuming that this can generally be accomplished. I think it can be shown that there *are* palpable advantages, but I shall not now rehearse them, for, in my judgment, a question of this kind should never be entertained for a moment. It is the duty of those engaged in scientific investigations, to take note of every fact, or supposed fact, that comes under observation, and to give the results of their inductions, without any reference to the question of immediate practical utility. It is just about a century ago, that measles and scarlet fever began to be recognized as distinct diseases, and we have only to go back to the time of Sydenham to find a similar distinction beginning to be made between smallpox and measles. It is no more likely that there was any immediate practical utility apparent in the first separation of those diseases than there now is in the differentiation of the affections under consideration, and there was certainly in those days, as in the present, no lack of opposition to these over-refinements, so-called, of diagnosis. The possible utility of clinical and pathological distinctions of this character, is a matter which only the future can fully determine, and it is unphilosophical and idle to attempt to estimate it in advance.

*Frequency of Cellulitis and Peritonitis.*—I now propose to speak very briefly of the frequency of these affections, of their causes, their diagnosis from other affections, and their treatment. Of their frequency, as compared with that of other uterine diseases, only an approximate estimate can be made. Courty, grouping both diseases together, considers that, either as primary affections or as complications of other maladies, they constitute about one-third of all uterine ailments. Aran found evidences of pelvic peritonitis in twenty-nine of fifty-three autopsies of females dying in his service. But, as Matthews Duncan justly observes, these were practically selected cases. They were not fifty-three women taken at random, but fifty-three women taken from a gynæcological service, and suffering from ailments so severe as to cause death. Simpson, West, and Duncan merely speak of them as being of frequent occurrence.

From my own experience I should say, that while these affections are far more common than has generally been supposed, they are by no means so frequent as Courty estimates. Of more than four thousand recorded cases of uterine disease of all kinds that I have seen during the past seven years in the different institutions to which I have alluded, and in private practice, I find only 109 entered on the books as due to cellulitis or peritonitis. This, however, does not represent the actual number of these affections that came under observation, for in nearly all the cases of flexion or version of the uterus in which adhesions were found, the displacement alone is entered as the diagnosis, no note being made of the peritoneal complication. Many cases, too, were undoubtedly overlooked, more especially during the first two or three years of this period; but after making a liberal allowance for these omissions, I am sure that the relative proportion of cases of this kind that can be diagnosticated does not exceed one in ten.

*Causes.*—The causes of these affections I shall merely enumerate, dwelling for a moment on one only. They are chiefly these:—

Parturition or abortion.
Endo-metritis or ovaritis.
Operations or injuries.
Escape of fluids into the peritoneum.
Exposure to cold.
Gonorrhœa.

It is the opinion of Matthews Duncan, that of all these causes, endometritis is almost the only one to be taken into account. He says:—

> "The theory on which I insist is, that these inflammations are all secondary, that they are produced by inflammation of the uterus, or of the tubes, or of the ovaries, or by noxious discharges through or from the tubes and the ovaries, or by mechanical injury. * * * Of all of the prolific causes, inflammation of the mucous membrane of the womb is, in my opinion, the most common, and this both in the puerperal and non-puerperal states." Again he states, "Now I assert, that in the majority of cases, pelvic abscess and metritis are stages and conditions of one disease."

With regard to this theory I would observe, that while endo-metritis is not at all an infrequent cause of these affections, I do not believe that they are by any means so generally dependent upon it as Duncan states. It seems to me, that local peritonitis may be just as much an idiopathic affection as local pleuritis, and I see no reason why the starting-point of the inflammation in these cases should be the uterus any more than the peritoneum or the ovary. I have certainly seen many cases of cellulitis and peritonitis that could not be traced to any concomitant or antecedent endo-metritis. There is, moreover, a certain pathological law bearing upon the propagation of disease by continuity of tissue (which is the method implied by Duncan's theory) that is worthy of consideration in this connection. It is thus stated in Dr. Peaslee's work on human histology. Speaking of the varieties of epithelium and their distribution, Dr. Peaslee says:—

> "Disease respects the distinctions made in regard to the different varieties of epithelium. In croup the nasal passages are almost invariably first affected and the disease follows the course of the ciliated epithelium over the posterior surface of the velum, and thence into the laynx and trachea, and *not* along the œsophagus into the stomach. Again, a disease commencing in the lower half of the pharynx, or the tonsils, does not soon extend to the larynx and trachea, as a general rule. Besides, the uterine glands may be diseased for an indefinite period, without the disease extending either to the uterine cavity or to the vagina; its conoidal epithelium being bounded both above and below by the scaly variety."

Although this is a question of great interest, the limits of this paper will not allow me to pursue it further.

With regard to the influence of the puerperal condition in giving rise to these affections, I find one statement in the work of Dr. Thomas that is not sustained by my own experience. He lays it down as a proposition that "peri-uterine cellulitis is very rare in the non-pregnant woman, while pelvic peritonitis is exceedingly common." I think both members of this proposition need confirmation, and especially the first. My own records show that out of 49 cases of cellulitis, 11 followed labour or abortion; 5 were consequent upon operations, and in the remaining 33 the cause was either not known or not ascertained. Of 16 cases of peritonitis 5 were due to labour or abortion, 4 to operations, and the other 7 to causes not known or not stated. Ten of the cases of cellulitis and six of peritonitis occurred in nulliparous women.

Having pointed out some of the means by which these affections are to be distinguished from each other, we have now to consider with what other diseases they are likely to be confounded, and how a differential diagnosis may be made; and here I shall have to be very brief, for although this is a most important part of the subject, it is too extensive to be treated here at any length. The principal diseases from which they are to be differentiated are:—

Hæmatocele.

Fibrous tumours.

Uterine deviations.

Displacement and fixation of the ovary.

Fecal infarction.

Hæmatocele differs from both cellulitis and peritonitis in being much more rare than either, in occurring with suddenness, and most frequently during a menstrual period, in being accompanied with hemorrhage, in giving the constitutional symptoms of loss of blood, and in occasioning a tumour that is at first soft and elastic, and only becomes hard when peritonitis complicates it or when the fluid portions of the blood have been absorbed. The most efficient of all means of diagnosis is, however, in the majority of cases the use of the hypodermic syringe, or the fine trocar that accompanies the aspirator of Dieulafoy. Fibrous tumours are distinguished by their mobility, the absence of pain or tenderness on pressure, by their evident attachment to the uterus, and by the absence of any signs of inflammation. The free mobility of a prolapsed ovary, whether enlarged or not, would serve to distinguish it from the tumour of cellulitis with which alone it would be likely to be confounded. Fixation of the ovary would be an evidence of peritonitis. Uterine displacements are best determined by the use of the uterine probe or sound. Fecal impaction high up in the rectum is likely to prove a source of error only so long as it is unsuspected. Nevertheless I have known several errors of diagnosis on this account, and the real disorder to be aggravated by the use of opiates given to relieve the symptoms of a cellulitis that had no existence. The pain, and tenderness on pressure, that commonly attend these affections, often render it impracticable to make such thorough exploration as is necessary for a satisfactory diagnosis. Under these circumstances anæsthetics are of inestimable value. I have frequently succeeded in making a diagnosis with their assistance, that would otherwise have been impossible. I think their full value for this purpose is not yet generally appreciated.

On the subject of *prognosis* I must be still more brief. So far as danger to life is concerned, there is, in most cases, nothing to be apprehended. Functional derangements of the ovaries, uterus, bladder, and rectum persist for a variable period, which is generally much less in cellulitis than in peritonitis. All evidences of cellulitis may pass away in a few weeks, but the signs of peritonitis, unless removed by pregnancy, generally remain for years. The subject of treatment I shall also dismiss in a very few words, and those few will refer chiefly to subacute and chronic cases of the non-suppurative variety. I will merely observe that the acute stage of either of these affections should be treated on general principles—anodynes, local depletion, fomentations, and sedatives are the chief therapeutic agents. After this stage has passed, the most efficient means of causing the absorption of the products of inflammation are, for both affections, successive fly-blisters over the hypogastrium, and the copious use of the warm vaginal douche every night and morning. The best apparatus for this is a keg that will hold two or three gallons, having an India-rubber tube attached to the stopcock. This keg being filled with water, as warm as the patient can bear, is placed upon a shelf ten or twelve feet high; the patient being suitably arranged on a lounge or chair underneath, the free end of the tube is introduced high up in the vagina, and the water allowed to flow in a constant stream against the pelvic roof and the neck of the uterus. The rapid improvement that follows the use of these means in the majority of cases is astonishing even to those who have had much experience in the use of them.

Having now considered as fully as the occasion will permit all the points to which I purpose calling attention in this paper, it only remains that I should exemplify some of them by illustrative cases. Before doing this I would state that the whole number of cases of which I have kept a record, is 87. Of these, however, 22 are so incomplete as to be of very little value, and I have cast them out. The remaining 65 give the following results:—

| | Cellulitis. | Peritonitis. |
|---|---|---|
| Whole number of cases . . . . | 49 | 16 |
| Acute cases . . . . . . . | 9 | 7 |
| In married women . . . . . | 44 | 13 |
| In single women . . . . . | 5 | 3 |
| In nulliparous women . . . . . | 10 | 6 |
| Tumour on right side . . . . . | 17 | 1 |
| Tumour on left side . . . . . | 28 | 1 |
| Tumour on both sides . . . . . | 4 | 14 |
| Following labour or abortion . . . . | 11 | 5 |
| Following operations . . . . | 5 | 4 |
| Cause not ascertained . . . . | 33 | 7 |
| Resulting in suppuration . . . . | 3 | 1 |

*Case* 1. *Pelvic Peritonitis.*—March 29, 1868, I was requested to see Mrs. S., æt. 32, mother of seven children. On the 20th of the preceding December (that is to say, rather more than three months before I saw her) she had aborted at about the middle of the third month of pregnancy. She knew of no cause for the abortion, and had never suffered from any symptoms of a uterine disease. She kept her bed for eight days, but on the second day after getting up, she was taken suddenly with severe pain in the hypogastrium, attended with faintness, nausea, and vomiting. Acute febrile symptoms then came on, and she was very ill for five days. There was great tenderness over the whole of the hypogastrium, distressing nausea and vomiting, and constipation of the bowels. About the sixth day of the attack the fever began to abate and the pain to wear away, but up to the time of my visit, three months afterwards, she had never recovered sufficiently to attend to her household duties, and had never been out of bed more than three consecutive days. Her disability was occasioned by weakness, hypogastric pain, and occasional febrile attacks with chills, that would occur every five or six days, the interval varying from five to eight days. She had menstruated twice, losing on both occasions unusual quantities of blood, and suffering from dysmenorrhœa, to which she had never before been subject. There had also been pretty constant vesical tenesmus and dysuria. Her medical attendant had evidently failed to appreciate her condition, for although he had been diligent in the use of many drugs, it had never occurred to him to make a vaginal examination, or in any way to interrogate the pelvic viscera, and I could not help suspecting that inappropriate treatment had done quite as much to exhaust her strength as the disease itself. On making a vaginal examination, I found the uterus anteverted and completely fixed, and the pelvic roof everywhere hard and unyielding. There seemed to be more tenderness on the left side, and on making pressure over the left iliac fossa, I thought I could detect a greater fulness on that side, but no distinct tumour could be made out. I regarded the case as one of pelvic peritonitis following abortion, and as it was the first case of the kind I had seen since my attention had been drawn to the differential diagnosis of cellulitis and peritonitis by Dr. Thomas, I was much interested in it. While explaining to the patient what I thought to be the nature of the disease, and what could be done for her, I incautiously hazarded the opinion, that she would never have any more children, the displacement and fixation of the uterus being such as to render conception very improbable, and abortion almost inevitable if pregnancy *should* occur. As she had already given birth to seven children, I found that this probable arrest of fecundity had no terrors for her, and was rather a source of satisfaction than otherwise. The treatment consisted of successive blisters over the hypogastrium, the free use of the warm vaginal douche every night and morning, and such tonic treatment as her enfeebled condition suggested. She began to improve at once, and in the course of a month I ceased to see her. On the 15th of the following November I was called to attend her in an abortion occurring at the beginning of the third month of pregnancy. I have since delivered her of two living children, one in December, 1869, and the last in January of the present year.

Both the symptoms and the physical signs in this case pointed unmistakably to peritonitis; and the manner in which the adhesions were gradually overcome and removed by pregnancy was highly instructive.

Not long after this I saw a very similar case in the practice of Dr. J. L. Campbell, of this city, but one of much greater severity, and following labour at full term. The doctor had promptly recognized the nature of the affection, and had asked me about three months after the attack to take the patient under my care. The same treatment was pursued, the same prognosis as to future pregnancies was given, but with much greater emphasis, and the same result attained. The woman became pregnant in less than a year, passed through the period of gestation without aborting, and gave birth to a living child. It is no exaggeration to state, that in this case, every part of the pelvic roof was, as Docharty expresses it, "as hard as a deal board."

*Case 2. Peri-uterine Cellulitis.*—About the middle of last August, I was urgently requested to go to a watering-place some two hundred miles distant, to see a lady who had been taken suddenly ill with some pelvic inflammation, and was thought to be in great peril. On arriving at the hotel, the husband of the lady, a gentleman about forty years of age, gave me the following particulars of the case. His wife, a lady about thirty-two years of age, having already given birth to five children, was anxious to avoid another pregnancy. As he had come to this place with his family to spend a couple of months in complete relaxation, and had nothing special to occupy his mind or divert his thoughts, his sexual impulses became very importunate, and he placed no restraint upon them, not even respecting the menstrual period. Having heard somewhere that lemon-juice was an excellent preventive to conception, it occurred to him to make a trial of it in a concentrated form, as a substitute for some of the other precautions that he had been accustomed to employ. Accordingly he made a pretty strong solution of citric acid, which was injected into the vagina directly after a sexual act, occurring during a menstrual period. The woman was almost immediately taken with severe pain in the pelvis, followed by high fever, and other symptoms of acute inflammation. The resident physician of the place was called in, who, not feeling equal to the emergency, sought the aid of a physician of this city, who chanced to be stopping at the hotel for a few days. This gentleman saw the patient on the third day, I think, of the attack. On making an examination, he found the uterus exceedingly tender to the touch, and a fulness about the vagina, which, in view of the fact that the attack had come on suddenly during a menstrual period, he very naturally attributed to the presence of an hæmatocele. The patient was placed under such treatment as her immediate symptoms required, but as she continued to be very ill for several days, and the consulting physician was obliged to return to New York, the husband became alarmed, and sent here for further advice. I saw the lady about the ninth or tenth day of the disease. The acute symptoms had then in a great measure subsided, and I found her suffering mostly from exhaustion, due to vomiting and want of sleep, the opium that she was still taking having the effect of making her morbidly vigilant, and keeping her profoundly nauseated. On examination, the uterus was found still tender, but neither fixed nor displaced. Its mobility was somewhat interfered with by a firm, immovable tumour in the right iliac fossa, about as large as an orange of medium size. There was no swelling directly behind the uterus, or on the left side, and no hardness of the pelvic roof. There was a muco-purulent discharge from the os uteri and vagina, which indicated clearly enough, the starting-point of the inflammation. The case was obviously one of endo-metritis and cellulitis, without any peritoneal complication. I discontinued the opium, and gave the patient thirty grains of chloral by the rectum, resorting to this method on account of her nausea. She slept soundly that night, and began to convalesce at once. The warm douche and blisters were recommended, and when I saw the lady about a month afterwards in this city, the tumour had decreased in size fully one-half. As her home is some distance from here, I have not since seen her.

*Case* 3. *Cellulitis.*—E. W., æt. 29, widow, mother of three children, the youngest being 3½ years old, came to the Demilt Dispensary, 6th of last January, on account of a uterine hemorrhage of five weeks' duration. She stated that she had been taken with pain in the hypogastrium about five weeks ago without any apparent cause, the attack occurring about a week after the menstrual period. It was accompanied with a chill, and some fever. On the third day of the attack she began to flow, and had continued to flow ever since. Was confined to bed only four days. On examination, nothing abnormal was found about the uterus or vagina; but a tumour, about as large as a turkey's egg, was discovered in the situation of the right broad ligament. It was tender to the touch, and immovable, and could readily be felt through the abdominal walls. The same treatment was pursued here as in the other cases, and when I last saw the patient about a week ago, the tumour was no larger than a hickory-nut. The hemorrhage ceased almost as soon as the treatment was commenced.

This patient, it will be observed, sought advice solely on account of hemorrhage, and I have seen perhaps half a dozen similar cases. I have now under treatment at the Woman's Hospital, a lady suffering from cellulitis, who was admitted chiefly on account of metrorrhagia from that cause.

I had intended to introduce here the histories of some cases tending to illustrate the difficulties of diagnosis that are sometimes encountered, and of which the service in the Strangers' Hospital has furnished me with several very interesting examples, but this paper has already grown to such a length that I am compelled to omit them.

In conclusion, I would observe that no one can be more fully aware than myself, of the very imperfect manner in which this subject has been presented, but if the remarks here made shall serve to awaken sufficient interest in these affections to induce others of larger experience and more mature views to contribute something, from the stores of their knowledge, to the settlement of the many vexed questions that hang around them, my object will have been fully attained.

## ART. III.—*On the supposed Oxytocic Action of Cinchona.*

By JAMES BORDLEY, M.D., of Centreville, Md.

THERE seems to be a growing conviction in the minds of many that cinchona exerts a direct influence over uterine contractions. But after extended experience with the drug, I am forced to the belief that it has neither direct nor indirect physiological influence over the organ. Living, as I do, and practising, in a region greatly infested by malaria, and therefore compelled to use the bark and its preparations daily, I feel fully prepared to answer the question in the negative. Had it been an agent of as powerful emmenagogue properties as some have asserted, it could not have failed to have produced those results in cases under my care. I have in remembrance many cases in which the sulphate of quinia was administered daily in large and often-repeated doses (as high as ten and fifteen grains each) during all the varied stages of gestation, without a single case in which such a result followed its use. One case I call to mind which more particularly illustrates the point.

Mrs. S. in sixth month of her pregnancy was attacked with most obstinate form of remittent fever. I was called to see her, and ordered thirty grains of quin. sulph. in six doses, one to be given every three hours: after and even before the administration of the last dose she exhibited all the physiological effects of the medicine (I might here say that she was abnormally susceptible to its action, and showed in a marked degree all its constitutional effects); upon visiting her the next day and finding that there had been a second remission, I repeated the prescription, but with like result, and this treatment was kept up, with some slight variation, for eight or ten days, during which time I never allowed the action of the drug to cease; lessening the quantity as the disease gave way to its influence. I have since that time delivered her at full term of a healthy male child.

I am aware of the folly of attempting to establish any principle upon the results of a single case, and such is not the fact in this instance. I simply cite this one as bearing more directly upon the question in point than any I can now call to mind, having kept no record of my cases, not having treated them with experimental ideas. But, as I said before, I am daily treating such cases, and I have yet to see the first case in which such results have been produced by its exhibition.

I cannot agree with Dr. Monteverdi, when he states that the emmenagogue properties of the bark are superior to ergot, and if carried far enough will produce expulsive contractions which will at last result in miscarriage and premature birth, as the result of its physiological action. Might we not look for the same result from the administration of any drug carried to its toxical effects?

When we consider the highly impressible state of the nervous and circulatory systems present in pregnancy, we are not surprised to see disastrous consequences following the exhibition of any substance which carries its excitation beyond the limits of prudence, or lowers the vital powers in a morbid degree: and my experience with the article now under consideration leads me most conclusively to assert that it must be given in dangerous quantities to effect Dr. Monteverdi's result; and I do not allude simply to the danger due entirely to miscarriage, but to its general constitutional effects; especially those acting upon the nervous system. It appears to me, that, in the highly excitable condition of the nervous centres existing during the latter months of pregnancy, the peculiar action of quinia carried too far would render the patient liable to any or all of the disasters peculiar to the parturient.

My opinion then based upon my experience leads me to go so far as to affirm as my decided conviction, that the true physiological action of cinchona, so far from producing any uterine contractions, tends directly to control such an action and to suspend contractions which threaten abortion. I allude more particularly to those threatenings which are the result of malarial disturbance. If it be true, as is asserted by some, that cinchona diminishes the proportion of fibrin in the blood and lessens its coagulability, it seems to me a most dangerous remedy to employ for the purpose, even were we to admit that it possessed such emmenagogue power when given in rational quantities.

CENTREVILLE, MD, March 20, 1872.

## Art. IV.—*Plastic Apparatus in Surgery, with Especial Reference to that variety made with Plaster of Paris.* By Samuel B. St. John, M.D., of New York. (With two wood-cuts.)

Fractures afford the widest field for the application of the dressing which it is the design of this paper to advocate, and hence no apology is needed for a few general remarks on the past and present treatment of this class of surgical injuries. The literature of the treatment of fractures gives more conflicting advice than that of any other department of surgery.

> "While more has been written on the subject of fractures than on hernia, lithotomy, amputation, or trepanning, yet no two books correspond, no two authors agree, even on the general points of practice, and every surgeon sets a broken limb, as he writes his name, after a fashion of his own."—*Bell, Princip. of Surg.*, vol. i. pp. 490–1. Lond. 1815.

Even so late as 1855 the question of immediate reduction was discussed, the negative being upheld by distinguished London surgeons. That question is now, happily, beyond discussion, and the controversy is upon the manner in which, and means by which, the reduction shall be maintained. If the ability of the medical or surgical man successfully to cope with disease or accident is measured by the paucity of the methods of treatment or varieties of apparatus with which the indications are to be met (and it surely ought so to be measured), who of us could expect a favourable result to follow the treatment of a broken thigh or a Colles's fracture of the radius? And yet we do expect it. Our egotism leads us to think that, by our shrewdness or acuteness of observation, or mechanical dexterity, we (perhaps we only) have been able to find the pearl in this heap of rubbish, to select from this mass of various, and it may be conflicting, advice, that which alone secures the desired end. Much more delusive, and more mischievous perhaps, because harder to abandon, may be a conviction founded upon one's own observation or theories.

Nevertheless, I boldly assert my belief that no other apparatus is so successful for treatment of fractures generally as the so-called immovable apparatus, and no other variety of that apparatus so good as that made with plaster of Paris or gypsum. This assertion compromises me to the utmost, for it is the expression of a conviction founded upon extensive observation and personal experience, and sustained by theories, some of which are original, so far as my knowledge goes.

Some variety of splint which shall restore in a measure the lost continuity and support of a broken limb, seems a suggestion almost instinctive, and hardly allowing of discussion. From the time of Hippocrates to 1768, splints of some kind, generally short wooden strips, were bound around a fracture with this object in view. In 1768 Percival Pott published a paper (a Few General Remarks on Fractures and Dislocations.

*Chir. Works*, vol. i. p. 221) in which he argued that the deformity, pain, and general distress attendant upon a fracture, were due *entirely* to irregular muscular action, and could be removed entirely by relaxing the muscles by position. His arguments were specious and forcibly conveyed, but they failed to secure the general adoption of his plan, for it was evident that he had lost sight of physical laws, which have so prominent a part in producing deformity and consequent pain; the distal end of a fractured limb falling by its own weight or failing to follow the proximal end, when that is moved either by accident or design. The muscular relaxation, too, it was seen, must be but partial, for the complete relaxation of a flexor group puts the extensors on the stretch, and *vice versâ*, so that a compromise, or semi-relaxation of both, is the best that can be had. Mr. Pott gives no statistics with his paper, showing results, but he says that this postural method "will not only succeed in all those cases in which the old method [by splints firmly applied] can ever be successful; but also in the majority of those in which it is not, nor, in the nature of things, can."

We notice also that he alludes to splints, which, according to Sir James Earle, he habitually used, and he insists upon having them extend over the joints above and below the fracture, and upon having them secured *loosely*, instead of firmly, as was then the general custom. It is easy to see that these long splints, though loosely bound on, would give more efficient support to a broken limb than the shorter ones then in vogue, be they bound never so tightly, so that Mr. Pott's *practice* was not such a revolution after all as at first sight it would seem. The probability is, that those cases which did well without any splints were those in which there was little or no tendency to displacement, and we confess to a disappointment in not having statistics of a number of cases of fracture of the femur giving the amount of shortening, where the treatment consisted simply in laying the limb upon a pillow in a flexed position.

Splints, therefore, still held their sway, and improvements were continually made in them as to lightness and adaptability to the affected limb. They were made of every conceivable material—straw, bundles of reeds or twigs, thin boards, sheet-iron, tin, wire, etc. Some of these were rudely moulded, to correspond to the contour of the limb, and the extension of this idea is to be found, at present, in all our instrument shops, in the shape of the elegantly carved and polished wooden splints, made rights and lefts like shoes, and warranted to fit any one who is patterned after the ideal Apollo of the maker. These splints, of course, required padding, elaborately arranged in order to make them support the fracture adequately, and to prevent too great pressure upon salient points, and the position of the pads was the prominent feature in the surgical instruction upon the treatment of fractures. These pads were continually slipping out of place, which, of course, rendered them worse than useless until replaced—thus necessitating frequent reapplication of the whole apparatus, to the annoyance of the surgeon and discomfort of the patient.

Then came the era of an entirely new idea—new, as far as the surgeons of Christendom were concerned; but, like almost everything else worth knowing, it seems to have been known and practised by the heathen for centuries. This was to use some material which could be rendered temporarily flexible, or capable of being moulded so as to take the shape of any figure to which it was applied, and which, subsequently becoming inflexible and rigid, would preserve the imparted form. The distorted, deformed limb was then restored to its normal shape, and maintained there by an apparatus moulded over it—thus fitting a splint to the limb, and not, as had been too often done, fitting the limb to a particular splint. The originator of this idea is unknown, but whoever he may be, he made the most valuable contribution ever made to the treatment of fractures, and deserves the eternal gratitude of every sufferer from fractures, and of all surgeons who have fractures under their care, by enabling them to treat this class of injuries with more credit and less trouble to themselves, and more comfort to their patients.

The application of immovable apparatus to fractured limbs dates from a period too remote to be fixed with exactness. "The Greeks," says Pouqueville,[1] "used a kind of mastic to maintain fractures immovable, and the apparatus they left in place until the fracture united." Belloste in 1696[2] describes thus his application of an apparatus to a fracture of the femur with severe contusions: "As soon as he came into my hands, I made strong extension, reduced the fracture, and applied linen moistened with eggs beaten up with oil and vinegar . . . and placed the whole in a trough of pasteboard." This was allowed to remain for more than twenty days without being disturbed at all. A paper by Moscati[3] describes the application of an apparatus to a fracture of the humerus in 1739, which consisted in putting the limb in a kind of mould, "fabriqué sur elle même," constructing "so to say, a kind of box which embraced the humerus and extended over the scapula and clavicle." This he made out of "bandages, oakum pads, and linen compresses," and covered the whole plentifully with the whites of eggs to bind together the pieces. Cheselden[4] gives the description of an apparatus formed of several pieces of linen saturated with a mixture of white of eggs and starch, and says, "there is no other bandage equal to it in the treatment of fractures." Sédillot[5] describes an apparatus in use among the Arabs, made of leather, pierced with rows of holes through which were drawn sticks of polished wood to give stiffness, and says that these sticks were withdrawn to allow pus to exude, showing that they recognized the great advantages of an apparatus for compound fractures which did not require removal in order to dress the wound, and he says that "the Arab surgeons make the pressure more agreeable and more uniform by wrapping the limbs in moss, and they make their apparatus immovable by covering it with a layer of clay, which in drying acquires the solidity of plaster." According to Paperi[1] the nomadic tribes in Tunis used plaster or mortar, such as was used for walls, in the treatment of fractures. Sir George Ballingall[2] says the natives of India used moulds of potter's clay, and relates an instance of a compound fracture of the leg in a little boy, for which he was preparing to amputate the leg, when the boy was carried off by his parents to a neighbouring potter, who made a casing of clay in which the leg eventually was saved. Nannoni[3] speaks of the apparatus formed of white of egg and flour, and states that it was in common use among the Italian surgeons, though he does not recommend it himself. Roche[4] saw it in constant use during the Spanish campaign, white of egg chiefly being used, and left on as a rule until the fracture, whether simple or compound, had healed.

---

[1] A. Bérard. Archiv Gén. de Méd., Nov. 1833, p. 389.

[2] Le Chirurgien d'Hôpital, p. 330.

[3] Mémoires de l'Academie de Chirurg., vol. iv.

[4] Anat., 7th ed., Lond. 1750.

[5] Gazette Méd. de Paris, 1838, p. 135.

We see, therefore, that the idea of fashioning a splint out of flexible materials moulded to fit the limb is of very ancient date. But, with this, as with almost all other valuable inventions, there seems to have been a time when it was forgotten—when he who revived and methodized it, and gave it a definite place in science, deserves equal credit with its author. The reviver was Baron Larrey, who had extensive opportunities for experiments and observation in the campaign in Russia, and who in 1830 published a monograph giving the "results of twenty years' experience with it." And, indeed, his experience would seem to have been even more extended than this, for he speaks of using it in the Rhenish campaign of 1792–4.[5] For important modifications we are indebted to Baron Seutin, M. Velpeau, and M. Mathiesen.

As the surest indication of the advance or regression of any new plan or invention lies in the criticisms of recognized authorities of succeeding generations, and as by them its fate is, in a measure, controlled, no apology is needed for presenting in this connection the opinion of leading surgeons of the past century, especially as by a comparison we may notice not only the progress of an invention, but the progress *in* an invention, or improvement in the invention itself, and in the method of its use.

Petit (following Belloste)[6] recommends the use of wetted pasteboard splints "because they can be moulded exactly to the limb, and because in hardening they acquire sufficient solidity to sustain all sorts of fractures, and especially those which seem the most difficult to retain."

---

[1] Lettera al Prof. Barzellotti, Siena, 1821.

[2] Outlines of Milit. Surg., ed. 1852, p. 358.

[3] Trattato della Malatt. Chir., Pisa, 1793.

[4] Nouveaux Élémens de Pathologie Méd. Chir., 5th ed., Paris, 1828.

[5] Sur le Traitement des Fractures des Os, 1832.

[6] Traité des Maladies des Os.

In 1837 the Russian authorities were so convinced of the superior merits of the starch apparatus that they ordered it to be adopted by the army and navy surgeons. Malgaigne[1] disapproves of it, but partly in a negative way, saying that he cannot see its advantages. Sir William Fergusson[2] gives qualified approval while admitting his lack of experience with it, and says, "I cannot but admit, that a fracture may be admirably treated in this way also. It is difficult, however, to imagine that the practice will be either safe or efficacious in all instances. It seems to be little in vogue among British surgeons." Pirrie endorses heartily the starch bandage after the subsidence of swelling, saying that he has had no experience in its immediate application, though he is inclined to think favourably of it.[3] Syme[4] does not think the "new method of starch bandage" of any advantage, and refuses even to admit that it is of advantage to allow a patient to leave his bed "to be propped up in a chair," but he betrays by his language an ignorance of the method of application and of its results. Druitt[5] approves of it, but says it should never be applied until all chance of swelling is over. Velpeau, in 1841, was so much pleased with it that he treated all his patients, having fractures, in this way. Bérard[6] used it freely, and relates with great gusto a case of simple fracture of the fibula which he allowed to go about on crutches on the 3d day after the accident. Cheselden[7] also praises the immovable apparatus. In a thesis of Dr. Markam in 1840 he says, "the starch apparatus, in the treatment of nearly all kinds of fractures, is now generally adopted by the Parisian surgeons, Lisfranc and Jobert alone excepted." Marchetti[8] states that "at the hospital of Grosseto alone, in three years (1842–5) Seutin's starch apparatus has been applied with *invariable success* in 14 fractures of the femur, 10 of the leg, 2 of the humerus, 8 of the clavicle, and 10 of the forearm." Erichsen[9] says "by employing the starch apparatus in the way to be pointed out, I scarcely ever find it necessary to keep patients in bed with simple fractures of the thigh for more than six or seven days, or of the leg for more than three or four—thus saving much of the tediousness and danger." Hamilton[10] observes, "the cases to which this apparatus seems to be adapted are a few examples of transverse or serrated fractures in which the bones have not become displaced, and in which little or no swelling is anticipated; and certain fractures which were originally more complicated, but in which a partial union, and the subsidence of the inflammation, have reduced them to a more simple condition; and especially is it adapted to cases of delayed union." The same author says, "I have even met with examples of compound fractures in which it has seemed proper to apply this dressing; but only when a sufficient time had elapsed to render it probable that there would be no sudden accession of swelling in the limb." The last author quoted has so far modified his views that, as he stated a few months ago, he is convinced that a fenestrated plaster of Paris splint is the best in which to treat nearly all compound fractures. "The objections to its use," Gross[1] remarks, "are altogether frivolous. The accumulated experience of the last twenty years is sufficient to convince any one of the safety and utility of this mode of dressing fractured limbs. It is not, of course, applicable to *all* cases, but there are few in which, in some stage of their progress, it will not be beneficial."

---

[1] Traité des Fractures et des Luxations, 1847, p. 263.

[2] Syst. Pract. Surg., p. 323.

[3] Princip. and Pract. of Surg., Lond. 1832.

[4] Princip. of Surg., Lond. 1842.

[5] Princip. of Surg., 1848.

[6] Archiv. Gén. de Méd., t. ii. 2me série.

[7] Operations in Surg. of M. Le Dran, trans. by Gataker, with remarks by Cheselden, 1768.

[8] Medical Statistics of the Tuscan Maremme.

[9] Science and Art of Surg., 2d ed., p. 182.

[10] Fractures and Dislocations, ed. 1860.

As we have already seen, the materials for making plastic apparatus have been very varied. The Greeks used "mastic" made of pounded shells or lime, white of egg, oil, and butter.[2] The Arabs used leather[3] and also plaster of Paris.[4] The natives of India employed clay,[5] the nomadic tribes of Tunis mortar. In the present century we find Larrey using a mixture of white of egg, camphorated alcohol, and extract of lead.[6] Velpeau, in 1830, used a mixture of ten whites of egg, ℥iv of lead-water, and ℥iij camphorated alcohol, but had previously used a glue of vinegar and rye flour. Seutin introduced starch, which was hailed by Velpeau as "une acquisition vraiment précieuse," but he (Velpeau) subsequently preferred dextrine "because the starch required heat, had to be applied with a brush or the hand, and did not readily soak into the bandages before their application." Also, because he thought it made a harder splint, and hardened more quickly. M. Chardon[7] recommends a mixture of white of egg, finely powdered alum, and lead extract, and in simple fractures also camphorated alcohol. In 1838, Lafargue de St. Emilion modified the starch apparatus by mixing with the starch powdered plaster of Paris, which possessed the quality of becoming "instantanement solidifiable." He gave this the name of the "gypso-amylacée apparatus," the proportions being equal parts of gypsum and starch. His contemporaries, however, seem not to have been impressed with the advantages of rapid consolidation, and it did not gain much favour. Pasteboard softened in water to allow of moulding to the limb was used in the seventeenth century, and is spoken of by Belloste in 1696,[1] also by Bérard,[2] as being used by Assalini in Italy. Plaster of Paris began to assert its supremacy in 1852, and since that time only one other new material has been proposed, viz., silicate of soda, "soluble glass" or "water glass," which is recommended as being water-proof.

---

[1] Syst. of Surg., vol. i. p. 870.

[2] Bérard, op. cit.

[3] Eaton.

[4] Paperi, op. cit.

[5] Sir Geo. Ballingall, op. cit.

[6] Op. cit.

[7] De l'Etoupade d'Alun et de Blanc d'Œuf dans le Traitement des Fract., Bulletin Gén. de Thérap., Méd., et Chir., 1839, p. 355.

To sum up, then, regarding materials, we may say that leather, felt, pasteboard, and gutta percha—all of which may be softened in water—have always borne a high reputation. Liquid applications, to be applied with a brush or the hand upon a substratum of cloth, such as solutions of starch, glue, dextrine, or water-glass, have given a very brilliant series of results, and under this head may be classed that variety of the plaster of Paris splint made by soaking thick cloths in a plaster "cream" (made by mixing gypsum with water to the consistency of ordinary cream). The latest modification of this type of apparatus is made by using the dry plaster incorporated with the meshes of an ordinary bandage, as will be described subsequently.

With regard to the method of application of plastic apparatus generally, we may remark, that the earliest were made in a very clumsy manner by placing the limb in a box and pouring the plastic material around it, or by smearing it over the outside of the limb, as was done in those alluded to as being made of clay or mortar. The first advance was in wrapping the limb in some fabric, such as cloth or matting, which was smeared upon the outside. These methods secured a strong splint, it is true, if made thick enough, but exceedingly heavy and difficult to remove. A great improvement was made by soaking the cloths in the plastic material, made temporarily liquid by some menstruum—usually water. It was then found that equally strong splints could thus be made, which were much thinner and lighter than before, and the advantage thus gained by a combination of the fibre of the cloth with the resisting material led to a more intimate and uniform combination by making the splint out of roller bandage, saturated with the liquid starch, dextrine, or gypsum. An improvement, in my opinion, though not an essential modification is the use of the roller bandage having the plastic material rubbed in dry, as will be explained hereafter. In the mean time, a better idea of the methods of application will be obtained from the authors themselves.

Eaton, an English Consul at Bassora, in a treatise on the country of Syria,[3] describes the manner of application as he saw it among the Arabs:—

> "A bad compound fracture of the leg from a falling field-piece, condemned to amputation by a European surgeon, was placed on oiled matting, the fracture reduced and plaster cream poured around it covering the posterior and lateral surfaces of the leg, foot, and part of the thigh. Pieces of hollow reed

---

[1] Op. cit.

[2] Op. cit.

[3] A Survey of the Turkish Empire, London, 1798, p. 218.

were arranged to carry the discharges from the wound. After this had hardened the whole circumference was covered, furrows being made to allow of moistening. Horizontal and vertical grooves were then made in order to remove it easily when necessary."

This patient recovered completely in four months. This method is now known as "plaster packing," or "half-packing," when the limb is only half encircled, and is now almost entirely out of use. A distinguished surgeon of New York tells me that he saw it in use in Halifax in 1868.

Korzeniewski[1] describes an apparatus consisting of eggs, soap, and alcohol spread on clean flax, strengthened with slender splints and covered again with the mixture until it was an inch thick. Pirogoff[2] used stiffeners of linen strips soaked in the solution, laid both lengthwise and crosswise, which were "not to be put where fenestræ were to be cut," the whole then to be smeared over with the mixture. Lawrence, of Brighton (succeeding Cheselden), used a method described in Chelius's System of Surgery,[3] in which he moulded his plastic materials (cloth saturated with white of egg and flour) over one side of the limb, and, when that was dry, trimmed the edges, and, re-applying it, moulded the other half, leaving about half an inch to allow of tightening when required. This he used until he thought all danger from swelling was over, and then he put over all a starch bandage making a solid casing. Larrey's apparatus was complicated; made of folded cloth, bundles of straw, pads of chaff and tow, compresses and a large piece of linen cut to fit the limb soaked in the white-of-egg mixture, the same being plentifully laid on outside. Seutin[4] at first used bundles of straw or strips of wood or iron as stiffeners, afterwards supplanting these by pieces of wetted pasteboard "*se moulant parfaitement sur toute la surface du membre fracturé,*" and he simplified the apparatus of his predecessors by replacing the numerous pieces by simple linen rollers. He applied first a many-tailed bandage and placed (in fracture of the leg) alongside the tendo Achillis a small longitudinal splint, then a coating of starch, a second many-tailed bandage and another starch layer; two long side splints of wet pasteboard, reaching down so as to double under the sole of the foot, completed the apparatus. Seutin afterwards used the roller bandage soaked in starch solution. Lafargue,[5] thinking that the wet pasteboard stiffeners retarded the hardening, replaced them by iron wire. Seutin claims the idea of cutting up the splint so as to inspect the limb, and calls it his "appareil movo-amobile;" but Cheselden, in 1761,[6] recommends making the apparatus thin over the crest of the tibia "so as to facilitate cutting it up and tightening it when it becomes loose," so that he evidently practised it half a century before Seutin's time, and the successive steps would seem to be arranged as follows:—

---

[1] De Ossibus fractis tractatus, p. 496—quoted by Gürlt.

[2] Klinische Chirurg.

[3] Trans. by South., vol. i. p. 505.

[4] Memoire sur le Bandage Amidonné.

[5] Gazette des Hôpitaux, 1839, p. 23.

[6] Op. cit.

To the Greeks and heathen of unknown ages belongs the origination of the idea. To Baron Larrey the reviving and methodizing of the practice. To M. Seutin the use of starch and the extension of the principle to the treatment of deformities, diseases of joints, varices, luxations, etc., and the revival of the practice of Cheselden of cutting the splint longitudinally, which was called by Velpeau "*une des plus précieuses qualités de cet appareil.*"[1]

I have thus far avoided giving the modern history of plaster of Paris, because, that being the material with which nearly all the cases in which I used the apparatus were treated and that used in nearly all the cases employed statistically, it requires especial mention.

This, which has now to claim our attention, has the advantage of hardening more rapidly than starch, dextrine, or white-of-egg, of making a stiffer splint, and of being easily cut off when desired if applied in the manner to be described. Dextrine is very hard to cut, and starch is very sticky and requires stiffeners usually to give the splint sufficient firmness.

Plaster of Paris, the hydrated sulphate of lime, for surgical use must have been slowly heated under 400° F. to drive off the water of crystallization and must be kept in a dry place moderately well secluded from the air. When mixed with water it combines with it and forms a hydrate, or "sets," becoming in a few minutes quite firm and hard. If the surgeon suspects that his plaster has become deteriorated from exposure to the air, he may restore it to its former condition by heating it for a short time at a temperature of about 350.°

The use of gypsum by the Arabs has already been alluded to. It was first introduced into Europe by Hendriksz, who used it successfully at the hospital of Gröningen. In 1816, Hubenthal,[2] apparently without knowing of Eaton's publication, applied it to a fracture of the forearm by the "packing" process, but he divided the case in halves by a string laid underneath the plaster, and pulled up through it just before it became hard, as moulds are made now by those who make plaster images. Its formal introduction to the surgical world, however, as a material for treating fractures dates from 1828, when experiments were instituted at Berlin by Klüge, Dieffenbach, and Keyl. In 1831, Wm. Beaumont introduced it into England, and it seems to have enjoyed moderate favour until 1854, when Pirogoff published a monograph[3] giving an account of its use in the Crimean campaign, which gave a fresh impulse to experiments with this material. Mathiesen in 1854, published a monograph[4] in which he advocated rubbing the dry gypsum into the meshes of a roller bandage, which is then to be rolled up, the whole to be moistened and applied like a dry bandage (*gypsverband*). This had the advantage of making an equally strong, though thinner and lighter splint, of being neater to apply, of applying itself to the limb more evenly and therefore of affording a more uniform compression, of being more susceptible of gradation of thickness to suit different limbs or different parts of the same limb, and finally, it could be more readily extended or pieced out should necessity arise.

---

[1] Gazette Méd. de Paris, 1858, p. 764.

[2] Nouv. Manière de Traiter les Fract. Nouv. Journ. de Méd., tom. v. p. 210.

[3] Der Gypsklebeverband bei Einfachen und complicirten Knochenbrüchen und in seiner Anwendung beim Transport Verwundeter und auf dem Schlachtfelde.

[4] Du Bandage Plâtré et de son Application dans le Traitement des Fractures Liége, 1854.

In comparing a method of treatment of fractures with others, we should look at its results, its risks, its comfort to the patient, and its trouble to the surgeon, and perhaps, in the order given. For results I refer to the tables I have compiled, mainly from the records of Bellevue Hospital, taking all the cases I could find fully recorded, treated with this form of apparatus, being 187 cases of simple fracture and 26 cases of compound fracture. That there are risks attending it is not to be denied, but are there not risks with every form of apparatus? I can readily understand the unwillingness of some surgical instructors to advise this plan, though they believe in it themselves, knowing from observation, that this apparatus unskilfully applied and carelessly watched is productive of the most fearful mischief; but I am also convinced, that with skilful application and the use of the necessary precautions against accident, especially in the hands of one accustomed to the use of this form of apparatus, it is attended with less risks and gives better results than any other with which I am acquainted. Its comfort to the patient can hardly be considered under discussion, and the trouble to the surgeon is so much less than with other methods, that I was constantly in the habit of employing it when the case admitted of a doubt and I was pressed for time.

The *special advantages* may be enumerated as follows, but it should be remembered that we are here giving the advantages of gypsum splints, and that many of these belong to that variety in common with other moulded apparatus and not exclusively to it:—

| | | |
|---|---|---|
| Perfect coaptation to irregularities of the limb, and as result of this— | Little tendency to displacement of splint. | Less trouble to surgeon. |
| | Complete fixation of fragments. | Freedom of patient to go on crutches or otherwise.<br>Less irritation. Less extravasation of blood.<br>Less swelling. |
| | No injurious pressure over bony prominences. | Less liability of excoriation. |
| | Uniform compression, giving— | Muscular rest. Diminution of spasm and removing one cause of displacement, preventing swelling and lessening it when it exists. |

Rapidity of hardening; allowing the surgeon to hold the fragments in position until the splint will hold them; simplicity of materials; extensive range of application; painlessness of application; lightness; porosity; elegance; cheapness; readiness of piecing out if necessary without removing it; ease and accuracy with which the strength of different parts may be varied; allowing wounds to be dressed without disturbing the fragments.

*Little Tendency to Displacement of Splint.*—In the majority of cases coming under my charge, the splints did not need adjusting for weeks at a time, and here we note a point made by Déroubaix,[1] that the irregularity of the contour of the limb, instead of being a hindrance, is a positive help and guarantee for immobility.

*Freedom of Patient to go about.*—The routine plan of treatment of a simple fracture of the leg at Bellevue Hospital was to put it up immediately, and get the patient up on crutches the next day. I hardly think that surgeons of the present day will agree with Malgaigne in saying that "for the patient to leave the bed is of no therapeutic utility, by it the surgeon only aims at pleasing the patient, at dazzling the eyes by a kind of 'tour de force' which is not wanting in originality."[2] I take it, that on this point, argument is unnecessary. Regarding this point in connection with fractures of the femur, he says:—

> "As to these, which the best constructed apparatus, with the aid of confinement to bed, so rarely succeed in curing without shortening, to add to the already existing difficulties of the fracture, the dangerous chances of walking, without even having to anticipate the slightest advantages therefrom, is a temerity which happily it is not necessary to combat, for I know of no French surgeon who has attempted it."

I refer simply to my tables, where are recorded fifty cases of this very injury treated with an average result better than that obtained by any other method, and in which, singularly enough, the two worst results are in cases which for other injuries were confined to bed during the consolidation of the fracture.

*Less Irritation, less Extravasation of Blood, and less Pain.*—That these results should follow a plan which prevents the ragged fractured ends from tearing fresh nerves and bloodvessels with every motion of the body seems rational, to say the least. In the cases coming under my charge, the splints as a rule not only caused no pain of themselves, but greatly diminished that existing at the time of application.

*Less Liability of Excoriation.*—The only two cases of severe excoriation which I saw, were cases of fracture of the thigh, one of whom under my care was *non compos mentis*, and did not call my attention to the fact that the apparatus was hurting him until the excoriation had progressed considerably. The other was a man who was very tolerant of pain, and said nothing, supposing that it was to be expected that the splint would cause some pain.

---

[1] Mémoire au Congrès Méd. Belge, presenté Sept. 1836.

[2] Traité des Fracts. et des Luxations, 1847, p. 63.

*Giving Muscular Rest.*—The roller bandage has had great reputation in all times in the treatment of fractures, as preventing muscular contractions, so painful to the patient and so productive of displacement of the fragments. "One overcomes entirely and at will the power of the muscles by the uniform and circular compression of a well-applied bandage," says Larrey;[1] and Velpeau[2] also gives a powerful argument upon the advantages of uniform compression. This apparatus is virtually a *snug bandage* which cannot get *out of place*, and painful jumping of the muscles after simple fracture was, in my cases, almost unknown.

*Prevents Swelling.*—Not only that which comes from blood extravasated from vessels ruptured by movement of the fragments, but that which results from inflammation, following the continued irritation, if motion be allowed.

*Lessens Swelling* which already exists, by the acknowledged action of steady, uniform compression.

*Rapidity of Setting.*—In this differing from all other forms of moulded apparatus, so that the surgeon can be sure of retaining in position whatever he can hold in place for fifteen minutes. Some of the cases given in the tables, especially cases of Pott's fracture complicated with backward dislocation, could not be kept in place by any mechanical device, even for a few minutes, but the quick solidification of a gypsum splint solved the problem at once.

*Simplicity of Materials and Cheapness* need no comment. *Extensive Range of Application* will be considered further on.

*Painlessness of Application.*—On several occasions, in applying leather splints to a sensitive fracture, the force required to mould the leather occasioned so much pain as to compel a resort to anæsthesia, while in applying plaster apparatus I never resorted to anæsthesia except to relax muscular contractions. Its *porosity* is such that it permits transudation of perspiration, so that I have frequently seen the outside of splints moist from that cause, and this quality is exceedingly valuable in announcing superficial excoriations (should they not be discovered prior to this by pain) by transmitting the serum. In the same way I have known a new opening of a compound fracture disclose itself.

*Ease with which Wounds may be dressed.*—The ease to the surgeon, and comfort to the patient with which a wound may be dressed through a trap in a gypsum splint, needs no urging to any who have seen it used.

The dressing, instead of being anticipated by the patient as a most painful though necessary process, is, in many cases, but a grateful irrigation of the wound, unattended by pain or even discomfort.

---

[1] Clin. Chirurg., 1829, tom. iii. p. 425.

[2] Arch. Gén. de Méd., tom. iii. p. 210

I cannot coincide with Prof. Gross,[1] that "the *objections to its use* are altogether frivolous," knowing it to be powerful for evil, but I will express my conviction that those objections can be more easily overcome by a careful, judicious, watchful surgeon, than the objections to any other form of apparatus. They are as follow :—

*Concealing Parts from View.*—This is met by cutting the splint longitudinally so as to inspect the limb.

*Constricting the Circulation.*—This, the most weighty of all, is met in the same way, and we must remember that whoever bandages a limb, runs a risk of producing gangrene, but we do not, therefore, proscribe bandages. Gamgee[2] says of constriction and gangrene following the use of this apparatus :—

> "In the numerous difficult cases which I have treated myself and seen others treat by this method, I never saw one of the accidents in question. I do not believe their occurrence possible in the hands of a skilful surgeon, except as one of those extremely rare, fortuitous occurrences which are apt to follow every operative procedure, and cannot be adduced as objections to a plan of treatment provided a sufficiency of well-established facts be adduced in its support."

*Compression.*—We have already seen the *benefits* of compression. It is charged that it prevents the formation of provisional callus, and delays the union.[3] The first I admit, the second I deny. Aside from the proven fact that some fractures unite with little or no callus, I noticed in cases under my observation, that there was a marked diminution in the amount of provisional callus, and frequently an apparent absence of it. With regard to union, as the tables will show, 51 cases of fracture of the tibia and fibula averaged 45 days in uniting; 27 of the tibia 42 days; 12 of the fibula 36 days; 12 of the humerus 37 days; 7 of the radius 31 days; 5 of the ulna 31 days; 19 Pott's fractures 39 days; 50 of the femur 44 days, etc. This is surely not long, and I have given tables showing the time of union in sixty-eight cases taken at random from the same records, where the limb was allowed to remain in a fracture-box, or loose splint, for at least one week, generally two or more; and attention is called to the fact that these cases compare most unfavourably with those treated from the beginning with moulded apparatus in just those fractures where the most motion is inevitable, viz., those of tibia and fibula, of tibia and of humerus. In experiments upon the lower animals, we find that if no splints are used, we get provisional callus; but using them we get none. It does not follow, however, that if we do part of nature's work she remains idle for a corresponding time. On the contrary, I believe that, finding the limb well supported, she goes immediately to work to make the permanent callus, and begins on the first week what is under other circumstances delayed till the fourth or fifth. On this point, Velpeau says,[1] "we understand, then, that the accomplishment of this end (l'union) will be the easier and the more rapid, the more perfect the quietude in which the fractured limb is kept." Who does not see, then, that, other things being equal, an apparatus which is never, or but rarely, renewed after its first application, is that which presents the greatest chance to insure this immobility so favourable to the consolidation of the callus?

---

[1] Op. cit.

[2] Surgical Researches, p. 169.

[3] Malgaigne, Gazette des Hôpitaux, No. 7, 1858.

*Excoriation from Pressure* has already been discussed, and applies only to those cases where the apparatus is so applied as to maintain extension. Even here it is less liable to excoriate than other forms, because it takes hold of a broader surface.

*Becoming displaced when Swelling subsides.*—This is fully met by the longitudinal section and taking in the slack.

*Softening of Apparatus*, if it is wet from urine, etc., especially in children. This may be averted by protecting it with oiled silk, or by making the splint waterproof, in exposed places, by a coating of varnish.

*Œdema* through traps left for dressing wounds. This will seldom give any trouble if oakum is firmly bound on, or if it does, it shows that the whole splint is too tight and needs section.

*Special skill* required in applying and managing it. This is a valid objection, and was so acknowledged thirty years ago by Velpeau.[2]

> "To reap the good effects of the compression of the immovable apparatus in cases of fracture, I cannot too frequently repeat that the bandage must be applied in a very methodical manner, because, though compression well exercised is a truly heroic means in such cases, I must also warn you that when employed by incompetent hands, it may become the cause of more or less serious accidents. Never forget it, it is a powerful resource, but it will not admit of mediocrity."

The longitudinal section of the apparatus is a great safeguard against constriction, and I would recommend it to every one not practised in the management of this form of splint. Even with this precaution, there is danger which only intelligent watchfulness can surely avert. Minor objections have been raised, that this method is uncleanly; soils the bed, the surgeon's clothes, etc. This is exactly in proportion to the surgeon's unskilfulness. With the plaster bandage especially, it is possible to put on a splint without soiling the bed linen or clothes, if only care be taken to squeeze the bandage tolerably dry. Dr. Pierson[3] says that this apparatus causes by its pressure a painful affection of the nerves and loss of power in the muscles, so that the disability of the limb is more lasting than after other treatment. Richter[4] states that it arrests perspiration and thus causes superficial excoriation. I can only say that neither of these points is sustained by my experience. I cannot forbear adducing, at the close of this list of objections, the following cases to which frequent allusions are made in the literature of this subject, extracted from this Journal for Feb. 1840, p. 460. They all, with one exception, occurred at one of the Parisian hospitals.

---

[1] Considerations Pratiques sur le Traitement des Fractures, Leçons Orales, p. 628.

[2] Leçons Orales du Clin. Chirurg., Bruxelles, 1841.

[3] Remarks on Fractures, 1840, Boston.

Abhandlungen aus dem Geb. der Pract. Med. und Chir., Berlin, 1832.

Case 1.—Colles' fracture; apparatus too tight; produced gangrene of the hand. Careful watching of the state of the circulation should have been able to anticipate this. In all the cases in which it has been applied at Bellevue Hospital, so far as I know, there has been only one case of gangrene, which was in an out-patient who failed to report for examination, as directed, coming back only after the mischief had been done.

Case 2.—Compound comminuted fracture of leg. Apparatus applied two and a half months after to enable him to go about on crutches, which he did, and one day he slipped and fell, breaking his leg again, for which the apparatus were removed, when some abscesses were found under the splint. He eventually made a good recovery.

Case 3.—Fracture of leg; good union in forty days, but some deformity. The apparatus was not applied *till all swelling had gone*, and there was no apparent reason why the splint should not have kept the bones in place if it was well made and the fracture was thoroughly reduced.

Case 4.—Fracture of radius and ulna, united with deformity. The splint became loose and cotton was tucked in at the ends to tighten it, a proceeding which left it still loose in the centre. It should have been cut longitudinally, a piece taken out, and reapplied with a bandage.

Case 5.—Fracture of tibia; delayed union; no apparent cause. Malgaigne thought this case illustrated the effects of compression in preventing the formation of provisional callus.

Case 6.—Fracture of patella. Starch bandage applied without any back splint to keep the pressure off from the vessels. Patient seen "a few times," and "suffering no pain;" was not seen again for two months. Results as might have been justly feared—gangrene.

The plaster bandage of Mathiesen has lately received a thorough trial at Bellevue Hospital, and with the most gratifying results. It combines the firmness and solidity of the plaster with the tenacity of the cotton fibre, thus securing a firm and tough splint with a minimum of plaster, and, by consequence, a minimum of weight, with the additional advantage of application in a form which enables the surgeon to secure the most accurate adaptation to the limb under treatment. The plaster bandage is prepared by rubbing the fine, dry plaster into the meshes of a cotton or flannel bandage, the coarser the texture the better (within limits), as it holds more plaster. I have used also bandages of canton-flannel, and coarse linen (towelling). The linen ones made the toughest and lightest splint, and ordinary flannel next best. Lately tulle has been used, and it is highly spoken of as making a lighter splint than any other material, but it is too weak to be snugly applied. Tarletan was the material used extensively by the Germans in the late Franco-German war, and they strengthened their splint by their wooden ribbons, pieces of which were worked in longitudinally. A fine film of plaster is then dusted over it and the bandage rolled up rather loosely. These bandages may be kept ready for use in tin cans with tightly-fitting covers, or each bandage may be separately rolled up in tin-foil. In making a splint for a fractured leg, for example, the leg is first enveloped in a layer of cotton wadding, or, what I prefer, a single thickness of soft blanket. If cotton is used it is best to hold it in place by a roller bandage, loosely applied over it. Burggraeve[1] preferred to use a layer of cotton one and a half inches thick, and no dry bandage, which he claimed was so elastic that it followed the diminishing leg as swelling subsided. The blanket will need no bandage, but may be secured by a few stitches at intervals. The plaster bandages are then immersed in a basin of hot water to which about ℥ij of common salt have been added (the high temperature and the salt both contributing to the rapid setting of the plaster). In about three minutes they will be saturated, and are ready to be applied. Extension then being made upon the foot, and the bones adjusted, the plaster bandage is taken from the basin, squeezed firmly to get rid of the superfluous water, and applied after the fashion of an ordinary roller, from the base of the toes up to or beyond the knee, each successive turn being drawn snugly to its place, but not too tightly, especially if the bandages have never been washed, as they will in that event shrink a little in drying. Experiments show that the plaster in setting does not contract at all, so that there is no danger of ligation from that source. Three, or at most four, bandages should make a firm splint from the toes to the knee. In applying the roller, should the plaster, which it holds, seem to dry, the hand may be dipped in the basin and rubbed over the dry surface, and indeed, it contributes to the firmness and elegance of the splint to keep the hand constantly passing over the successive turns of the bandage, rubbing in the plaster and smoothing the surface. An elegant finish and, at the same time, some additional strength may be given by mixing about ℥ij of the plaster with so much water and smearing it smoothly over the surface. It is best not to apply a dry roller outside, until the splint hardens enough to hold the parts in position, as it retards the setting by preventing evaporation, but the limb should be carefully held by the surgeon for a few minutes, and then placed upon a rubber blanket until it becomes quite dry and hard, when a dry bandage may be applied, if desired, though it is not at all necessary.

Thus far, the application in an average case of simple fracture has been considered. Several details, which will at once enter the mind of the surgeon, must now be considered. First. How soon may the splint be applied? Let us see what was the practice of our predecessors. Larrey,[2] as a rule, applied it immediately, except where there was any considerable swelling, or where the muscular contractions were increased by the unavoidable handling of the limb. Velpeau[3] says "apply at once in all cases where there is not swelling, or where the soft parts are healthy, for swelling after fracture comes too soon for inflammation, and is mainly from extravasated blood, and an early reduction and complete retention of the fragments in place will prevent irritation, the initial step of inflammation, and prevent additional rupture of bloodvessels." Seutin (*op. cit.*) applied it at once, believing that it acted to prevent inflammation in still another way, the uniform compression of the bandage (according to his view) restricting the arterial, while it favoured the venous circulation. In a late article Volkmann[1] advocates immediate application, arguing that it tends to restrain traumatic reaction. For my own part, I believe that an intelligent surgeon, who can see his patient every day, and who employs the precautions alluded to, need not hesitate to apply the splint as soon as the patient comes into his hands. I speak advisedly in this, having repeatedly applied it while the patient was suffering from the shock of the accident, in injuries ranging from simple fracture of the fibula up to compound fracture of the femur, and in no case have I had occasion to regret doing so, but in all the cases the fixation of the irritating fragments has seemed to act as a prophylactic against swelling and general nervous irritation. In average simple fractures "constitutional symptoms" were almost unknown. These statements are supported by the cases given tabularly, where in eighty cases of simple fracture this splint was applied within twenty-four hours from the time of the injury, in many of them within two or three hours, and the fact that fourteen of these were from direct violence shows that cases were not selected which were less apt to be complicated by swelling. In twenty-six other cases the splint was put on within forty-eight hours, three being the result of direct violence.

---

[1] Nouv. Système de Pansements Inamovibles, Bruxelles, 1838, p. 20.

[2] Op. cit., quoted by Gürlt.

[3] Op. cit.

Secondly. In what cases should cotton wadding be used as a lining, and in what cases blanket? A year ago I employed cotton where, from the contusion of the soft parts, great swelling might be anticipated; since I regarded it as a more elastic medium. At present I use blanket in every case, because it is more evenly distributed over the surface of the limb, and thus by giving more even support tends to prevent swelling, and also because by making an early section of the plaster casing it can be loosened a little should necessity arise.

Perhaps this reference to section of the apparatus will afford the most natural approach to an explanation of the manner in which it may be done, without hurting the patient or injuring the splint. This section may be most easily made about two hours after the application of the splint, as it then cuts like hard cheese. If, however, the section is delayed until the splint has become dry and hard, it may be softened in the track of the proposed section, by boiling water applied with a sponge for a few minutes. (Nitric acid is used by some for this same purpose, but it ruins the knife, sometimes goes through and blisters the skin, and does not make the section any easier.) A common shoemaker's knife, *kept sharp*, is the best instrument to use in opening the splint, and the risk of cutting the patient may be reduced to a minimum by making two sections an inch apart, one on either side of the median line nearly through the plaster, and then raising the intervening piece at the top and completing the section by alternate nicks on either side. By thus removing a strip one inch wide a firm hold may be secured of the cut edge of the splint so as to spring it open to inspect the limb, and it also affords an opportunity of tightening the apparatus, should it have become loose by subsidence of swelling. Should the swelling, however, have gone down so much that it is necessary to remove a strip more than an inch wide in order to make it hug the limb, it will be better to remove the splints and make a new one, otherwise the tendency will be to roll the bones in toward the median line of the limb, in the case of the leg or forearm especially. I have tried various kinds of cutting pliers, Henry's, Seutin's, etc., and saws, also, but found none so serviceable as the knife. An instrument made by Leiter, of Vienna, a gentleman thoroughly versed in the management of gypsum apparatus assures me leaves nothing to be desired in this direction. Its mechanism is such that a tremendous leverage is obtained, so that when the lower blade is slipped between the splint and skin, the upper one cuts down upon it through the splint. The instrument has just been introduced into this country, and promises well, but I desire nothing better than a sharp knife.

---

[1] Berliner Klin. Wochenschrift, March 16, 1870.

In compound fractures the method of its application varies. If the opening through the soft parts is not large, and there is not much contusion or laceration, an apparatus like that for simple fracture may be applied, and a fenestra cut, through which to dress the wound. It must be made heavier and stronger than if the fracture were simple, but as the patient is to remain in bed with the limb supported for several days, if not weeks, this is not a disadvantage. In several such cases I found that five bandages were usually needed, and the splint was, in all cases of fracture of the leg, extended above the knee. The fenestra should be cut in accordance with the principles given in describing the longitudinal section of a splint for simple fracture. Some make a practice of leaving the piece covering the wound attached by one side like a trap-door, but in my opinion, it is neater to remove it entirely, as it enables the surgeon to trim the edges of the trap all around in a uniform manner, and moreover, the trap-door is apt to be in the way when the wound is being dressed. This method of procedure is, however, applicable only when the trap is to be of moderate size, of a breadth, perhaps, one-fourth of the circumference of the limb. The *length* of the trap is nearly immaterial, as it does not materially diminish the supporting power of the splint. When, from any cause, such as the extent of the external wound, or the suspicious look of the soft parts (and this applies equally to simple fractures with great contusion) it becomes necessary to have a large surface accessible to inspection without disturbing the fragments—a combination of the plaster bandage with blanket soaked in gypsum "cream" is to be used—and it was this combination under the name of the "interrupted splint" which, during the past year, secured such brilliant and gratifying results at Bellevue Hospital in the treatment of bad compound fractures.

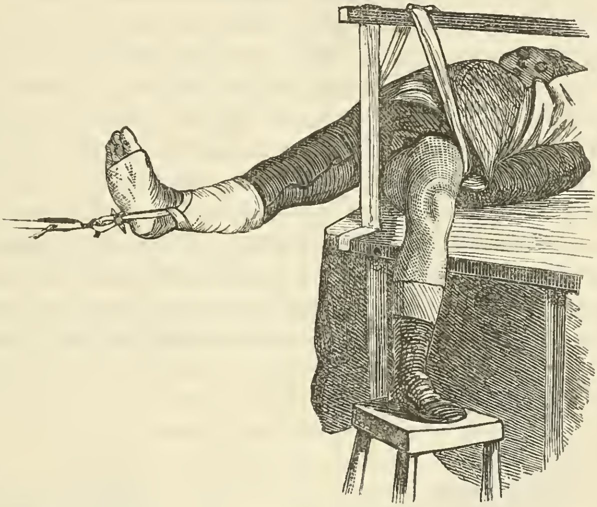
To apply this, the limb must be thoroughly inspected to find out what parts are least contused and least liable to become the seat of local trouble. It is only necessary to find a strip of sound tissue about two inches wide connecting the limb below the fracture with that above. If that can be found on the anterior surface of the leg or arm, so much the better, as the connecting band between the two parts of the splint will then be out of danger of being soiled by discharges, or of being wet when the wound is syringed out. A piece of ordinary blanket is then to be cut, about eight inches wide, and long enough to extend well above and below the joints on either side of the fracture. (In fracture of the leg it is usual to have this reach from the toes to the middle of the thigh.) The limb having been previously encased in blanket, as described for simple fracture, a plaster "cream" should be made, and the blanket previously cut out, immersed therein—or, which is preferable, the blanket may be laid upon a table and the mixture thoroughly rubbed in with the hand. It should then be folded upon itself twice so as to make a strip two inches wide, and laid along the part of the limb previously determined on. A plaster bandage should then be applied in the ordinary way below the point of fracture, binding the limb to the connecting piece and extending to as near the point of fracture as it is deemed safe to allow the limb to be concealed from view. Up to this point the limb has been supported by the hands of assistants, but no attempt made to reduce the fracture thoroughly. Now, the lower half of the apparatus being completed, an assistant, grasping it, makes strong extension (if necessary) and the bones are accurately adjusted. The upper end of the connecting band is then to be fastened to the limb above the fracture by turns of a plaster bandage. Thus an apparatus is made, fitting the limb accurately above and below the seat of injury, and having its two parts connected by a stiff bridge two inches wide—or, in other words, it is a plaster splint with an immense fenestra. In such an one which I made for a hopeless case of compound fracture of the leg, where the man refused amputation at first, the leg could be exposed from about three inches above the ankle-joint to two inches below the knee-joint, and the apposition of the bones which could be distinctly seen at the bottom of the wound, was perfectly maintained until the amputation two weeks later. In this case, owing to the oblique course of the crushing force (car-wheel), the only sound skin lay in a spiral line which I followed with the connecting band. If the connecting band is of necessity placed upon the depending side, it is of advantage to keep it away from the limb just opposite the wound by means of a thin blanket-pad placed under it; this pad to be removed after the splint has hardened, leaving a space through which a strip of oiled silk may be passed for the protection of the splint—the remainder of the space to be stuffed with cotton or other material easily changed when soiled. Indeed the trap should be edged all around with oiled silk tucked under the edges, and cotton should be placed between the oiled silk and the skin to prevent the discharges from passing under the splint.

Another way which is very elegant, and which is of use in cases where the wound is not very large, is to cut, in a large piece of oiled silk, a hole a little larger than the wound, and then to fasten the edges of the hole to the skin around the wound by means of collodion. This collodion, being insoluble in the discharges, keeps the oiled silk so closely applied that the discharges are forced to find their way out through the hole in the silk, where they are received into a compress of oakum bound on. It will sometimes be found useful to paint the splint with a solution of gum shellac in alcohol (℥j to Oj) which gives it a water-proof finish. This, however, has two disadvantages; it prevents the transudation of perspiration, and it renders it somewhat difficult to enlarge the trap, should that be necessary, since it gives the surface a glazing which is extremely hard in itself and prevents the use of water to soften the splint in the track of the proposed section. In case the connecting band is found to be too weak, it may be at any time strengthened by additional strips of soaked blanket laid along it and secured above and below by turns of plaster bandage. In some cases where the connecting bridge was of necessity so narrow that I feared it would be too weak, I inclosed a stout piece of hoop-iron between the folds of the soaked blanket, the iron reaching about three inches above and below the proposed trap, the ends being imbedded in the more solid parts of the splint. This is also a useful plan to adopt when there is reason to fear that the trap might have to be enlarged and more strain brought to bear, consequently, upon the connecting band.

Special Fractures. *Fracture of the Femur.*—Perhaps in no other fractures have the merits of the gypsum apparatus been so conspicuous as in those of the femur, "it having triumphed here, not only by the brilliancy of the results, but by the comfort afforded the patient during convalescence." A simple fracture of the femur treated with any other form of apparatus compels confinement to bed for six weeks on the average, with the consequent lowering of vital status, discomfort to the patient, and trouble to friends and attendants; while with this the patient may be out of bed upon crutches the second or third day after the fracture, and is as comfortable and nearly as well able to wait upon himself during his whole convalescence, as is a man with simple fracture of the tibia in the fourth week of treatment under the old regime. And the results as regards shortening, time and strength of union, and subsequent usefulness of the limb, surpass statistically those of any other method of treatment, as a glance at the cases given further on will show. In the words of a surgeon whose name is identified with a different plan of treatment, "the statistics thus far are better than those of any other method," and the refusal of a prominent teacher to recommend this method, is founded, as he himself acknowledged to me, on the belief that special experience is required to apply it properly rather than in any distrust of the method itself.

A description of the method of application is essential to the completeness of this paper, and I give it rather with that view than with the design of improving upon the admirable paper of my friend, Dr. Bryant.[1]

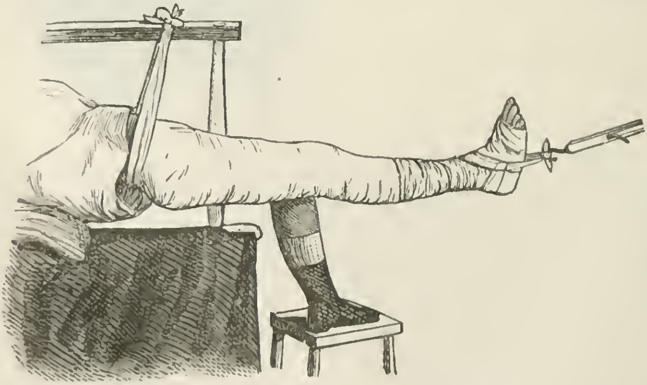
A table must be obtained and an upright bar about one inch in diameter secured to the middle of one end, so as to rise about two feet above the top of the table. In Bellevue Hospital an iron bar is kept which fastens on by clamps, but in private practice I have used with entire satisfaction, a wooden bar one and a half inch in diameter, put through a hole bored in the end of a common kitchen table and lashed to the braces below.



This upright should be thinly padded and covered evenly with a roller bandage. If the padding is too thick it will be in the way; if too thin the bar may excoriate or cause undue pressure. The patient is to be placed upon the table with the nates well down towards the edge, and the upright projecting between the thighs, so that the perineum rests lightly against it. My practice has been to place another table in line with the first and abutting against it, to support the legs of the patient and to afford a point from which to make extension. The provision for extension may be made in one of two ways, by traction upon a so-called Buck's extension apparatus, of adhesive plaster, which should be made with a very strong but narrow loop from malleolus to malleolus, so as to be in the way as little as possible, or, which is preferable, by a clove hitch around a stout plaster splint put on the day previous from the toes to the knee. A blanket previously spread upon the table should then be cut and drawn around the injured thigh so as to form a neat covering, and a strip eight inches wide should be extended around the pelvis. This should be drawn smooth and stitched as in a fracture of the leg. A strip of blanket one foot wide and four feet long (the relay), folded upon itself twice, so as to make a strip three inches wide, should be placed with its centre resting on the perineum and the ends brought obliquely upward and outward, the anterior passing over the crest of the ilium and the posterior over and above the tuberosity of the ischium. While the blanket is being adjusted, the patient may be etherized, and, as soon as fully relaxed, extension should be made, the scrotum (in the case of a man) having been carefully drawn upward and toward the sound side. The upright bar must be made to bear a little to one side of the median line to avoid injury to the urethra, and especial care must be taken that the blanket strip, called the "relay," should rest symmetrically in the flexure of the thigh and perineum, so as to present a groove along its center in which the upper edge of the inner side of the splint may rest. Extension is to be made by compound pulleys until the leg is by actual measurement as long as its fellow. If the lower half of the splint has been put on previously, as mentioned above, a trap may be cut over the malleolus to obtain a point from which to measure. Before applying extension strongly, however, the pelvis should be raised about four inches from the table by means of a stout sling, passing around the upper part of the pelvis and over a stout wooden bar stretching from the top of the upright to a stool, about two and a half feet high, placed upon the table above the patient's head. Pillows should be placed under the head and shoulders to elevate them to a line with the pelvis. The bandages are now to be applied, piecing out the part already on and completing the splint as you pass upward. Pains must be taken to make a neat spica and not to allow the "relay" to become displaced. Small pieces of blanket soaked in plaster "cream" may often be used with advantage to strengthen

---

[1] New York Med. Record, Sept. 15, 1871.



the anterior and antero-lateral portions of the upper part. Felt or pasteboard may also be used for this purpose, being worked in between the layers. About ten bandages will be needed in all, including those used in making the lower half. After the application is complete, the patient should be lowered to the table, but the extension should be kept up until the splint is quite hard. The projecting ends of blanket should then be cut off and the perineal edge trimmed with oiled silk to prevent injury by wetting, especially in children.

In Vienna, the upright used for counter-extension has a projection from its side, about six inches from the top of the table, on which the tip of the sacrum is made to rest, the body and upper lumbar region being supported by a frame about eight inches high which rests upon the table. In one of the cases given in the table (Case No. 23), Dr. Bryant used no upright for counter-extension, but made traction instead upon the "relay" in the perineum. This idea has been still further practicalized by Dr. Van Wagenen, at present connected with Bellevue Hospital, by passing counter-extending bands over the perineum and having brought them up one on each side, fastening them to a frame upon which the patient lies, which frame raises his body a few inches from the table, while his pelvis projects beyond its edge so that the hands of the surgeon can readily pass between that and the table.

In its application to *fractures of the tibia and fibula*, there is nothing especial to be said except that, these being the most common fractures, this method has here received the most thorough trial. Three good bandages (five yards long) will make a stout splint for most adult legs, unless the fracture should be near the knee, when four may be required, as it is then essential to carry the splint half way up the thigh, and it should in all cases extend to the toes when first applied to insure quiet of the leg muscles. In cases of high fracture of the tibia, it is often advantageous to make a circular amputation of the splint above the ankle after two weeks and begin passive motion of the ankle-joint. This is preferable to removing the leg temporarily from the splint. When there is great tendency to overriding, a good plan is to flex the leg upon the thigh sufficiently to enable the posterior surface of the thigh to act as a surface of counter-extension, the splint being carried above the knee. In Pott's fracture I have used with satisfaction, to produce inversion of the sole of the foot, a Dupuytren's splint applied outside the splint to give it shape while hardening, obviating the necessity of holding it, which may be tedious if the plaster is poor.

One case of Pott's fracture under my charge, complicated with backward dislocation of the foot, was so admirably maintained in position by a gypsum splint as to elicit the commendation of an avowed opponent of the system, who said he could not think of any other apparatus which would fulfil all the indications. When it is desirable to have the lightest possible splint, pasteboard, gutta-percha, or felt may be worked in between the successive layers of bandage, and they will be held so tightly as to be in no danger of slipping even if the splint be entirely removed and replaced. Two strips of felt and two plaster bandages thus disposed make an elegant, effective, and very light apparatus. The use of alum water (℥iv to Oij) in which to soak the bandages renders it possible to make a stiff splint out of two good plaster bandages, but in my hands they have proved brittle, not having elasticity enough to allow of their being sprung off (should there be occasion) without damaging them. Such splints, however, answer admirably after being cut down not only in front, but also posteriorly, leaving only two points of attachment of the two halves, one at the heel, the other at the top, so that the two halves were merely hinged together. The edges of these splints for the leg may be bound with adhesive plaster, so as to prevent their being broken by the surgeon's fingers in springing them open to inspect the leg, and this contributes much to the elegance of their appearance.

In a few cases of *fracture of the patella*, the plaster bandage has been used with remarkable success; in no case, so far as my knowledge goes, with a decidedly bad result. When the joint is tense with effusion, it cannot well be applied, but if there be only a moderate amount it may be used, and indeed, has been, with such a close union of the fragments that it was pronounced bony union. In these fractures, as there is usually little or no contusion, a roller bandage may be substituted for the blanket lining. Two firm compresses having been laid, one below the lower fragment, the other above the upper one, and secured by strips of adhesive plaster, the plaster bandage is then applied from the ankle up, making a figure of 8 around the knee and continuing the splint well up toward the groin. This should be applied while the patient sits on the edge of a table or chair to relax the extensors. Some place behind the popliteal space a light wooden splint, about four inches wide and a foot long, so that more tension may be used in drawing the fragments together by the figure of 8 turns without danger of constricting the limb. It will be seen that the summit of the knee may thus be left exposed for examination of the fracture, and it seemed, in two cases falling under my notice, that there was a decided tilting forwards of the fractured ends from the strong backward pressure of the bandage upon the other extremities of the fragments. This, it was claimed, could be counteracted by carrying additional turns of the bandage directly across the line of fracture, but it has the disadvantage of hiding the fracture completely from view. The number of cases is not, however, yet sufficiently large to enable one to cover up such a fracture with confident expectation of a good result. A compromise may be made by treating the fracture through a large fenestra cut in a stout plaster splint reaching from ankle to groin, which forms a posterior splint incapable of displacement, securing rest of the quadriceps extensor muscle, and affording very convenient points of attachment for straps, strings, or adhesive strips, or whatever one may be using for the approximation of the fragments. In that plan of treatment, which consists in drawing the fragments together by strips of adhesive plaster crossing each other, this form of splint is especially useful, since traction can be made directly downward and the strips fastened to the front of the splint by a few turns of a dry roller, instead of passing downwards and *backwards* as in the ordinary posterior splints, and tilting the fragments forward as already alluded to. If, as some hold, the separation of the fragments is due mainly to effusion into the joint, the success already attained by the use of the bandage alone may be due to pressure stimulating absorption.

In simple *fracture of the ulna* it has in several instances proved itself to be all that could be desired. But as this is not a severe test of its powers it may be passed by with the remark that those who believe in interosseous pads for fracture of the forearm can mould a plaster splint before it hardens by indenting it firmly along the interosseous space, so as to make a prominent ridge when viewed from the inside. For convenience in allowing a coat sleeve to be worn, it is certainly admirable, while impatient but imprudent patients, who would rebel against wearing clumsy wooden splints, by way of precaution, after a fracture had united with tolerable firmness, will readily submit to a light and comfortable gypsum one.

In *Colles's fracture of the radius*, its advantages over other methods are not so evident. Still its record here is by no means a bad one. I succeeded in two cases in obtaining excellent results by using the gypsum bandage from the elbow to the wrist-joint, making the splint especially strong and thick at its lower edge, and holding the fracture reduced by pressure upon the splint until it was quite hard. In one case I used small pads upon the radial and ulnar borders of the lower part of the forearm, so that the splint could be more firmly applied without risk of arterial and venous obstruction. Of course the fingers and hand had to be bandaged with dry rollers. In fractures of the radius high up, the recorded cases are all in its favour. In fracture of both bones with tendency to shorten, counter-extension should be taken from the anterior surface of the upper arm, the forearm being flexed at a right angle and the splint extending about three inches above the elbow-joint.

In *fractures of the humerus* low down the forearm should be flexed at a right angle, and the splint applied from the wrist to the axilla. If there is much shortening, two methods are in use, one that just given, relying upon the weight of the splint for extension; the other where the splint is extended over the shoulder, forming a shoulder-cap, by means of the spica, which closely hugs the axilla and takes its counter-extension from that part. It is claimed by some, that any effective counter-extension from the axilla would check circulation through the axillary vessels, but evidences of serious obstruction complicated none of the cases in which I applied it although the upper edge of the splint was well imbedded in the axilla. The counter-extension was derived, it seems to me, mainly from the angle of the axillary border of the scapula with the long head of the triceps muscle, the scapula being tolerably well fixed by the spica and a body bandage.

In *fractures of the clavicle* it is not more successful than the usual treatment in Bellevue Hospital at present, by two strips of adhesive plaster, one around the arm and passing back, and the other under the point of the elbow and over the opposite shoulder. Applied in the ordinary way in which a roller bandage is used by some in this fracture, it is superior, inasmuch as it retains its place, the successive turns not sliding upon each other, but it is most serviceable as an auxiliary to the adhesive plaster strips, to distribute pressure, especially over the olecranon process of the ulna. I have twice seen œdema and commencing ulceration in the opening cut to avoid pressure over the tip of the olecranon process, the risk of which can be entirely avoided by the use of a little gypsum cap moulded over the elbow, a small pad (to be subsequently removed) making a depression which receives the olecranon.

So far as I have been able to learn, the plaster bandage has been applied only once in *fracture of the ribs*, and that was in the last case of this injury which came under my care during my hospital service. It occurred to me that it might possess two advantages over the adhesive plaster bandage, viz., less liability of slipping, and a certain amount of vertical stiffness not possessed by the adhesive plaster, the gypsum apparatus formed by successive turns of a three-inch roller sinking into the intercostal spaces and preventing the motion of the fragments under the spasmodic action of the bruised and irritated intercostal muscles, while it prevented the motion of the whole sterno-costal system equally well with the adhesive plaster bandage. The success of this single trial was all that could be desired, and the relief was more rapid and more complete than I have ever seen with the adhesive band.

In one case of *fracture of the inferior maxilla*, where a gypsum cap was made to fit the chin and was bound on with a four-tailed bandage, it seemed to me to be inferior to gutta-percha, being rather heavier and more clumsy.

In the manufacture of apparatus to fulfil certain indications after exsections, much opportunity is given for the exercise of mechanical ingenuity, and much independence of instrument-makers may be gained by the surgeon. Thus, in resections of the knee, elbow, or ankle, an apparatus may be moulded to the part previous to the operation, taken off and reapplied. This should be of the "interrupted" variety previously described, or, if desired, it may be "bracketed," that is, one where the upper and lower parts are connected by two or three iron brackets imbedded at either end in the solid plaster portions. An apparatus for use after an exsection of the hip in a boy four years old has received such an unexpected amount of credit from surgeons who saw the case, and illustrates so well the variety of indications that may be met without expense of time, money, and patience at the instrument-makers, that I give it somewhat in detail.

The boy being placed, face downwards, upon a hard bed, and moderate extension being kept up on the leg operated on, a blanket was first thrown over his back and legs, as a lining for the apparatus. A blanket soaked in gypsum "cream" was then moulded over his back and legs, reaching down to the bed on either side, and between the legs. Strips of stout hoop-iron were laid upon this to serve as stiffeners or braces, and, additional pieces of soaked blanket being laid upon them, the edges of the first-mentioned piece were turned back over them and the blanket lining turned back over all. This hardened in a few minutes, was removed, trimmed, and a large opening cut to allow of defecation and of dressing the wound. Thus a mould of the posterior half of the body and legs was obtained, from the armpits down. The trough corresponding to the sound leg was turned up at its lower extremity to make a foot-piece, but the other was extended in a semicylindrical shape about six inches beyond the heel, and across its open extremity stretched a bent iron strip whose ends were imbedded in the plaster on either side. This served for the attachment of an India-rubber loop for keeping up extension by pulling upon a so-called Buck's extension apparatus applied to the leg. The little fellow, when bandaged into this was as portable as a log, and was taken out daily upon the balcony when the weather permitted. For more than two months he lay bound to this trough, and yet so evenly distributed was the pressure of his body that there was not even excoriation over bony prominences, although no padding of any kind was used; while another boy, in better condition, under observation at the same time, who had been subjected to the same operation and placed in a wire splint, developed two very troublesome bedsores in spite of all that I could do by padding and stuffing.

This immunity from danger in pressure upon a hard surface when the pressure is evenly distributed suggested to me the applicability of a gypsum apparatus in cases of threatened or actual bedsores, pressure being removed from the painful spot by cutting a hole or making a depression at that point. I have had only one opportunity of testing the practicability of this plan, and the result in that case was indecisive, the patient being at the time moribund. I am encouraged, however, by this case to repeat the experiment, and if successful it will be a cheap substitute for the air- or water-cushion, and not so readily displaced. In one case I applied a gypsum apparatus, at the instance of another surgeon, as a brace in incipient caries of the spine; but was not able to follow up the case.

Rest for inflamed or luxated joints is admirably secured by an apparatus like that for simple fracture, and any desired applications or inspection can be made through a large trap. Extension can be combined with rest upon the principles already given when treating of extension in fractures with shortening.

In contrivances to equalize pressure gypsum is invaluable. In a case of upward dislocation of the acromial end of the clavicle, a gypsum apparatus extending from the wrist to the middle of the humerus (the arm being flexed at a right angle), fixed the forearm and distributed pressure over its whole ulnar side in such a way that an adhesive plaster strip carried under the forearm and over the clavicle held the bone in place for weeks without pain or inconvenience. The fact, that in this case, before the application of the gypsum apparatus, the pressure of the strap was so unbearable that it was necessary to take it off at the end of twenty-four hours, shows its utility.

A gypsum splint from the toes to the lower ring of a "Sayre's extension apparatus" for the knee-joint, proved very useful as a substitute for the adhesive plaster strips around the lower ring, and suggested itself to me by the continual slipping of the strips, necessitating reapplication of the whole apparatus. The pressure in these cases was evenly distributed over the dorsum of the foot, and caused no pain or excoriation. It will be seen that the extension was here maintained by pushing on the foot instead of pulling on the leg, as is done by the adhesive strips.

It has proved useful, also, as a temporary precautionary apparatus, applied to sound limbs upon which, for some reason (such as reduction of luxation, etc.), unusual strain was brought to bear. In case of a fracture of the humerus below the middle with luxation at the shoulder-joint, an apparatus of this kind might enable the reduction to be accomplished without waiting for the fracture to unite. In such cases, the fingers having been firmly bandaged, the splint should be applied very tightly, and after the reduction at once cut up longitudinally and loosened a little. Under this head of precautionary apparatus would come the splint mentioned in Case 10, further on, which was used where there was necrosis following a compound fracture, the sequestrum becoming loose before the fracture had united with sufficient solidity to allow of an operation unless the parts were thoroughly supported, and in which I removed through the trap a large sequestrum which, but for the splint, it would have been unsafe to meddle with, for several weeks.

I subjoin the statistics of 142 cases of simple fracture, mostly taken from the records of Bellevue Hospital, which were treated by the gypsum apparatus.

Of these 142 cases of simple fracture, there are 51 of the tibia and fibula (exclusive of Pott's), 27 of the tibia, 12 of the fibula, 12 of the humerus, 7 of the radius, 5 of the ulna, 19 Pott's fractures, 1 of the astragalus, 2 of the os calcis, 1 of the scapula, and 5 of the patella. The average time of union of the tibia and fibula was 45 days. 41 cases averaged only 36 days. The average time of union of the tibia was 42 days, and 22 of these averaged 38 days. Of the fibula, the average time was 36 days; of the humerus 37 days; of the radius 31 days; of the ulna 31 days; of Pott's fractures 39 days; of the ossa calcis 30 days.

Of the fractures of the tibia and fibula, 22 were put up in the plaster splint within the first 24 hours, generally within the first 12 hours; 4

were put up between 24 and 48 hours afterwards; 15 between 2 and 7 days, and 10 after that time. Of the fractures of the tibia alone, 11 were put up within 24 hours; 2 between 24 and 48 hours; 10 between 2 and 7 days, and 4 subsequently. Of fractures of the fibula alone, 4 were put up within 24 hours; 1 between 24 and 48 hours; 3 between 2 and 7 days, and 1 subsequently. Of fractures of the humerus, 7 within 24 hours; 1 between 24 and 48; 3 between 2 and 7 days, and 1 subsequently. Of fractures of the radius, 5 within 24 hours; 2 between 2 and 7 days. Of fractures of the ulna, 2 between 24 and 48 hours; 2 between 2 and 7 days, and 1 subsequently. Of Pott's fractures, 8 within 24 hours; 2 between 24 and 48 hours; 6 between 2 and 7 days, and 3 subsequently.

In all, 57 fractures were put up within 24 hours after the accident, and of these 8 occurred from direct violence, by which is meant heavy bodies falling upon them. 12 were put up between 24 and 48 hours, of which 1 was from direct violence; 45 between 2 and 7 days, of which 8 were from direct violence; 23 after the first week, of which only 1 was caused in that way.

The whole 142 cases average 40 days in uniting. Sixty of these cases were treated in wards with which the author was officially connected, as senior assistant and subsequently as house surgeon, and in a majority of these the apparatus was applied and the cases were watched by him personally, and care has been taken to verify the correctness of the hospital statistics of some of the most important cases by comparison with private records.

Not to confine my cases entirely to those treated with the gypsum splint, I have compiled the following cases, comprising, with those already given, all the simple fractures (exclusive of fractures of the femur) treated at Bellevue Hospital within three years, of which a full record is found on the books. The compilation is mainly with reference to the time of union.

First.—*Fractures treated with Leather, Felt, Pasteboard, or Gutta Percha Splints.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24 | cases | fracture of | tibia and fibula | averaged | 44 | days | in uniting. |
| 15 | " | " | tibia | " | 37 | " | " |
| 9 | " | " | fibula | " | 43 | " | " |
| 27 | " | " | humerus | " | 39 | " | " |
| 18 | " | " | radius | " | 34 | " | " |
| 15 | " | " | ulna | " | 32 | " | " |
| 13 | " | Pott's | fracture | " | 37 | " | " |

Second.—*Cases treated for at least one week, generally two, with Fracture-Box, or other loose Splint.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 31 | cases | fracture of | tibia and fibula | averaged | 50 | days | in uniting. |
| 12 | " | " | tibia | " | 47 | " | " |
| 6 | " | " | fibula | " | 38 | " | " |
| 10 | " | " | humerus | " | 42 | " | " |
| 1 | " | " | ulna | " | 35 | " | " |
| 8 | " | Pott's | fracture | " | 45 | " | " |

Of the 1st class we have 121 cases, with an average time of union of 38½ days. Of the 2d class, 68 cases, with an average time of union of 47 days.

*Table giving* 50 *Cases of Fracture of the Femur treated with the Gypsum Apparatus.*

| Name. | Age. | Date of fracture. | Point of fracture. | Am't of shortening. | Date of application of apparatus. | Date of removal of apparatus. | Am't of shortening after union. | Cause of fracture, and remarks. |
|---|---|---|---|---|---|---|---|---|
| | | | | *Inches.* | | | | |
| John McN | 7 | Jan. 13 | Junction up'r & mid. thirds | .... | Jan. 15 | Feb. 23 | None | |
| Pat. R. | 37 | " 7 | Lower third. | ⅓ | " 9 | " 23 | None | |
| John W. | 33 | .... | Below trochanter. | 1¼ | Splint on | 7 weeks | ¼ | Cart-wheel. Ether not used. |
| Ed. M. | 3 | .... | Middle. | 1 | " " | 45 days | ¼ | Kick of horse. Ether not used. |
| Frank P. | 33 | .... | Lower third. | 1¼ | " " | 7 weeks | ¼ | Direct violence. Ether not used. |
| Ed. M. | 14 | .... | Middle " | 1¼ | " " | 42 days | ¼ | Ether not used. |
| Pat. D. | 19 | Nov. 20 | Upper " | 1⅛ | Nov. 28 | Jan. 6 | None | Direct violence. No ether. |
| James H. | 45 | Jan. 13 | Middle. | 1¾ | Jan. 13 | Mar. 1 | ¾ | Fracture compound. |
| Adam B. | 43 | Dec. 15 | " | 1 | Dec. 16 | Jan. 21 | ⅛ | Ether used. |
| David D. | 63 | Nov. 3 | Cervix. | 1¼ | Nov. 7 | Dec. 19 | ¾ | Ether used. |
| Peter O. | 60 | " 24 | " | 1⅓ | " 29 | Jan. 14 | None | Ether used. |
| Charles S. | 55 | " 12 | " | 1½ | " 16 | " 7 | ⅜ | Ether used. |
| Thomas F. | 16 | Oct. 22 | Middle. | 1 | Oct. 25 | Dec. 5 | ⅛ | Ether used. Direct violence. |
| Pat. M. | 33 | " 15 | " | 1¼ | " 16 | Nov. 27 | None | Ether used. |
| Wm. M. | 4 | July 19 | " | ¾ | July 20 | Aug. 25 | ¼ | Ether not used. Walked on splint. |
| Pat. F. | 28 | " 24 | Lower third. | .... | " 25 | Sept. 2 | None | Ether not used. |
| Wm. S. | 9 | " 22 | Middle. | .... | " 23 | Aug. 28 | None | Ether not used. Direct violence. |
| Benj. R. | 1½ | Aug. 11 | " | .... | Aug. 12 | Sept. 13 | None | Ether not used. Direct violence. |
| John M. | 10 | Apr. 21 | " | .... | Apr. 28 | June 2 | ⅜ | Ether not used. |
| Ann H. | 28 | Mar. 2 | " | 1¼ | Mar. 3 | May 14 | ⅜ | Ether used. Fracture compound, and from direct violence. |
| Peter R. | 29 | Apr. 12 | " | 1¾ | Apr. 14 | " 26 | None | Ether used. |
| Pat. M | 38 | " 26 | " | ¾ | May 6 | June 24 | None | Ether used. |
| Lewis G. | 3½ | May 21 | Lower third. | .... | " 21 | " 29 | ½ | Ether used. Patient walked on splint. |
| Conrad C. | 13 | June 6 | Upper " | 1 | June 8 | July 22 | None | Ether used. Direct violence. |
| John W. | 5 | " 13 | Middle. | 1 | " 14 | " 20 | None | Ether used. Direct violence. |
| John K. | 32 | July 14 | Lower third. | 1¼ | July 18 | Aug. 30 | ½ | Ether used. Wheel of truck. |
| James B. | 35 | " 27 | Middle. | .... | " 28 | Sept. 8 | ¼ | Ether used. |
| John M | 27 | Oct. 5 | Lower third. | .... | Oct. 10 | Dec. 1 | ⅛ | Ether not used. |
| Nellie W. | 4 | Aug. 20 | Middle. | 1 | Aug. 21 | Sept. 20 | ½ | Ether used. |
| James B. | 35 | July 27 | " | .... | July 28 | " 15 | .. | Ether used. |
| James C. | 32 | Oct. 12 | Lower third. | 1 | Oct. 13 | Dec. 6 | ⅛ | Fracture compound. |
| Frank A. | 35 | Aug. 7 | " " | 1 | Aug. 16 | Oct. 1 | ⅛ | |
| Fred. B. | 45 | June 22 | " " | .... | June 24 | July 31 | .. | Good union and position. |
| Mat. B. | 4 | Apr. 26 | Upper " | .... | Apr. 22 | May 15 | .. | Good union and position. |
| David D. | 59 | May 16 | Lower " | .... | May 17 | June 26 | ½ | |
| Thomas L | 6 | Apr. 17 | " " | 1½ | Apr. 19 | " 1 | None | Ether used. Fracture by direct violence. Splint cut longitud'y. |
| Mark W. | 28 | " 14 | Upper " | 2 | " 15 | " 6 | None | Ether used. |
| John S. | .. | Mar. 17 | Lower " | 2 | Mar. 18 | " 15 | None | |
| Samuel L. | 18 | Nov. 11 | Middle. | 1 | Nov. 13 | Dec. 16 | | |
| John R. | 55 | Sept. 14 | Cervix. | 1 | Sept. 18 | Oct, 23 | | |
| Joseph C | 48 | Aug. 22 | " | .... | Aug. 22 | Sept. 20 | 1½ | Patient in bed during treatment. |
| Mary B. | 50 | June 23 | Cervix int. cap | 1 | June 25 | Aug. 5 | | |
| John M | 32 | Dec 13 | Upper third. | .... | Dec. 14 | Jan. 16 | 1 | |
| George W. | 5 | Nov 30 | Middle. | .... | " 1 | July 6 | 1 | |
| Wm. S. | 43 | May 28 | " | .... | ..... | " 6 | 1 | Patient in bed during treatment. |
| Fred B. | 45 | June 22 | Lower third. | Marked. | June 24 | " 29 | | |
| John L. | | Nov. 14 | " " | .... | Nov. 14 | Dec. 29 | | |
| John McD. | 7 | Feb. 1 | " " | ¼ | Feb. 3 | Apr 10 | None | |
| M. C. | .. | Nov. 23 | Middle. | Marked. | Nov. 25 | Jan. 2 | None | |
| John C. | 58 | Dec. 7 | Lower third. | .... | Dec. 7 | " 21 | ¾ | |
| Pat. C. | 23 | June 21 | Middle. | 2 | June 21 | Aug. 20 | 1½ | Patient in bed during treatment. |
| Jas. D. | 50 | Apr. 23 | Upper third. | 1¼ | Apr. 26 | June 23 | None | |

In analyzing the cases we find that the average shortening in all 50 cases is $\frac{1}{3}$ of an inch. The average shortening before treatment, so far as given, is $1\frac{1}{4}$ inch. The use of an anæsthetic does not seem to have essentially altered the result, for 38 cases where ether was used give an average shortening of $\frac{1}{3}$ inch. 35 of these, where patients went about freely on crutches, give average shortening $\frac{1}{4}$ inch. The average time of union in all 50 cases to time of leaving off splint is 44 days. 18 cases give no shortening, the average shortening of these 18 on admission was $1\frac{1}{3}$ inch. 16 cases under 18 years of age give $\frac{1}{5}$ inch shortening. 27 cases over 18 years give between $\frac{1}{3}$ and $\frac{1}{2}$ inch, and 21 of these average less than $\frac{1}{4}$ inch. In 23 cases the splint was applied within 24 hours; of these 6 were from direct violence, and 2 were compound. In 14 cases the splint was applied between 24 and 48 hours after the injury; of these 2 were from direct violence. In 8 cases the splint was applied between 2 and 7 days after, and in 3 cases after 7 days had elapsed.

| | Average Shortening. | On Admission. |
|---|---|---|
| 21 cases had femur broken in middle | $\frac{1}{4}$ inch. | $1\frac{1}{2}$ |
| 15 " " " junction of middle and lower third | $\frac{1}{5}$ " | 1 |
| 7 cases had femur broken in junction of middle and upper third | $\frac{1}{20}$ " | $1\frac{1}{3}$ |
| 5 cases had femur broken at cervix | $\frac{1}{2}$ " | $1\frac{1}{4}$ |
| 1 case had femur broken below trochanter | $\frac{1}{4}$ " | $1\frac{1}{4}$ |

How do these statistics compare with those of other modern hospitals? Holthouse, in the last edition of Holmes' Surgery, says that at present, in London hospitals, shortening occurs after fracture of the femur in adults in 90 per cent. of the cases, and 50 per cent. in children. In these cases it is 25 per cent. in adults, and 50 per cent. in children. He gives 50 cases with an average shortening of $\frac{3}{4}$ of an inch. He recommends the plastic apparatus for infants, and for adults after the *first six weeks*. A paper by Dr. Gurdon Buck, of this city, in 1861, gives 20 cases, 17 of which had from no shortening up to $1\frac{1}{4}$ inch; average, $\frac{1}{2}$ inch; only 1 adult without shortening, and 3 children. In a number of cases collected by Dr. Shrady from the Records of the New York Hospital in 1859, out of 74 cases 19 had no shortening; 55 had $\frac{3}{4}$ inch. Of the 19, 13 were over 12 years old. Average shortening of the 11 under 12 years of age was $\frac{1}{2}$ inch. In 27 cases reported in *New York Journal of Medicine*, 1858, by Mr. J. Campbell, the average time of union was 45 days.

In every point, then, are the statistics of cases of fracture of the femur treated by this method superior to those of any other method. It seems to me idle to say that the patient runs too many risks of falling, etc., if he is allowed to go about on crutches. Surely he runs risks if confined to a close room, or the foul air of a hospital ward, when he might be breathing the pure air outside. The difference seems to be that if he falls and refractures his thigh it is chargeable to the stupidity of his surgeon; if he dies from pneumonia, empyema, or an enormous bedsore over his sacrum, it is a "visitation of Providence."

*Table giving Statistics of 26 Cases of Compound Fracture treated with Gypsum Splint.*

| No. of case. | Name. | Age. | Date of fracture. | Bone and Point. | Date of application of apparatus. | Date of removal of apparatus. | Result. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 1 | Jno. T. | 22 | Oct. 18 | Tibia, middle | Oct. 19 | Nov. 27 | Good union and position | Fractured by direct violence. |
| 2 | A. S. | 20 | Aug. 31 | Tibia and fibula, middle | Aug. 31 | Oct. 6 | Some union | Complicated by temporary œdema and erysipelas; good union two months after. |
| 3 | Chas. A. | 26 | Aug. 19 | Olecranon process | Aug. 19 | Sept. 15 | Good union | Some stiffness at elbow which disappeared afterwards. |
| 4 | Mary N. | 35 | Apr. 16 | Tibia and fibula, lower third | April 27 | ...... | " " | Old fracture with necrosis. |
| 5 | David O. | 40 | Jan. 29 | Tibia and fibula, middle | Jan. 29 | Sept. 22 | " " | Emphysematous and great extravasation of blood. |
| 6 | Jno. R. | 40 | Sept. 26 | Pott's | Sept. 26 | Dec. 20 | " " | Fractured by direct violence. |
| 7 | Peter G. | 39 | Nov. 17 | Tibia and fibula, upper third | Nov. 18 | Jan. 20 | Tolerable union | See detailed record. Fractured by direct violence. |
| 8 | Wm W. | 15 | July 2 | Tibia and fibula, lower third | July 2 | Oct. 7 | Good union | " " " " " |
| 9 | Wm. F. | 12 | June 22 | Radius and ulna, middle | June 22 | Aug. 5 | " " | Fractured by direct violence—struck by a piece of wood; wound small. |
| 10 | David W. | 28 | May 11 | Tibia and fibula, middle | May 11 | Sept. 15 | " " | Tibia protruded; sharp hemorrhage. See record. |
| 11 | Albert S. | 10 | Mar. 12 | " " " | Mar. 12 | Apr. 24 | " " | Fractured by direct violence; tibia protruded. See record. |
| 12 | Jno. B. | 29 | Mar. 27 | Tibia and fibula, lower third | Mar. 27 | June 15 | " " | Fractured by direct violence; piece of fibula removed. See record. |
| 13 | Owen K | 37 | April 21 | Tibia and fibula, middle | April 21 | Aug. 1 | " " | Large abscess formed. See record. |
| 14 | Dan. R. | 63 | Nov. 3 | Femur, middle | Nov. 7 | Jan. 8 | " " | Tibia and fibula on same side also broken. See record. |
| 15 | Wm. L. | 28 | Oct. 22 | Tibia, lower third | Nov. 3 | Dec. 8 | " " | |
| 16 | M. R. | 16 | May 11 | Tibia and fibula, middle | May 12 | Jan. 17 | " " | Femur on same side also broken. |
| 17 | Ann H. | 28 | Mar. 2 | Femur, middle | Mar. 3 | May 14 | " " | Fractured by direct violence; œdema of labium. See record. |
| 18 | Jas. H. | 45 | Jan. 13 | Femur, middle | Jan. 13 | Mar. 1 | " " | Fractured by direct violence. See record. |
| 19 | Mat. H. | 32 | Jan. 24 | Tibia and fibula, middle | Jan. 24 | Mar. 28 | " " | Fractured by indirect violence; small opening. Emphysema and extravasation. |
| 20 | Jas. A. | 22 | Feb. 3 | Humerus, middle | Feb. 3 | Mar. 9 | " " | Small wound; abundant venous hemorrhage. |
| 21 | Henry M. | 21 | Aug. 11 | Radius and ulna, lower third | Aug. 11 | Sept. 12 | Imperfect union | Patient a sickly man; wound small. |
| 22 | Jno. R. | 30 | Feb. 17 | " " " | Feb. 17 | ...... | " " | Had necrosis. |
| 23 | David H. | 30 | Jan. 28 | Tibia and fibula, lower third | Jan. 28 | ...... | Good union | Tissues emphysematous and distended with blood. |
| 24 | Wm L. | 28 | Oct. 22 | Tibia, lower third | Oct. 22 | Nov. 30 | " " | Struck by locomotive; wound small. Bad scalp wound also. |
| 25 | Jas. M. | 9 | Dec. 7 | Tibia and fibula | Dec. 7 | ...... | Necrosis but good union | Fractured by direct violence. See record. |
| 26 | Jas. McD. | 37 | Oct. 30 | Tibia and fibula, lower third | Nov. 5 | Jan. 16 | Good union | Fractured by direct violence. See record. |

We have 26 cases in all, 12 of tibia and fibula, 5 of tibia alone, 1 of humerus, 3 of radius, 1 of ulna, 1 Pott's fracture, and 3 of the femur. The average time of union, so far as given, is 63 days. 20 occurred from direct violence. 23 were put up at once, or within 24 hours after receipt of injury. Of course a great many more cases of compound fractures are recorded in which the plaster splint was used, but as these died from the shock of the injury, pyæmia, septicæmia, or other cause plainly not dependent in any way upon the method of dressing the fractured limb, I have not introduced them here.[1]

Some of these cases were so complicated and otherwise interesting that I give herewith a brief synopsis of the history.

Case VII.—Peter G.; this patient received a simple fracture of the tibia and fibula Nov. 17, from being run over by a light wagon. Contusion not very marked; fracture nearly transverse; gypsum splint applied next day, and patient allowed to go about on crutches. Splint cut down before it hardened, and reapplied with dry bandage. Patient was comfortable until Nov. 28, when he began to feel dull, heavy pain over site of fracture, and drew my attention to a discoloured spot opposite that point, outside of the splint. Removing the splint, I discovered that a small abscess had formed and burst—the abscess communicating with the fracture. Small pieces of bone subsequently came out. A fenestrated splint was applied, and he made a good recovery.

This case goes to prove the porosity of the splint, and its property of transmitting intelligence of the kind cited, viz.: The bursting of a small abscess, not accompanied by sufficient inflammatory or other constitutional symptoms to call for complete inspection of the limb prior to its bursting.

Case VIII.—Wm. W., age 15. Patient fell four stories, striking on his feet. When admitted, he was found to have a fracture of the right external malleolus, opening into the joint. There was also a fracture of the internal malleolus. There was a small wound over external malleolus communicating with the point of fracture. The leg was put up, within four hours after the accident, in a fenestrated splint, the front and sides being left exposed. Necrosis followed, and eighteen small pieces of bone were taken out at intervals. This patient reported to me seven months after the injury, and could then walk without a cane; the wound had completely healed, and there was some motion at the ankle-joint. Owing to loss of substance, the foot is canted to the inner side, so that he is obliged to wear a compensatory sole. Amputation was seriously discussed in his case. His pulse never rose beyond 112, though there was at times considerable pain. After being discharged from the hospital, while yet on crutches and coming back to be dressed, a plaster bandage was put on by the figure of 8 turn afresh every dressing, as there was a strong tendency of the foot to luxate inwards.

---

[1] Of the 26 cases just given, 21 were treated in wards to which the author was attached, and the measurements in many of these cases were confirmed by other surgeons, and particularly by those opposed to this treatment. The fact that the worst results are in cases which were kept in bed may indicate that the weight of the splint keeps up extension when the patient is on crutches.

This may serve to disabuse the minds of some of the idea that the application of a gypsum apparatus necessarily takes a great deal of time, for here was a case in which it was applied afresh two or three times a week, as the readiest way of dressing the limb.

Case X.—David W., age 28. On May 11 patient fell down a hatchway, and a case of gunstocks, weighing about two hundred pounds, fell after him, striking his left leg, producing a compound fracture of the tibia and fibula, near the middle. The sharp upper fragment of the tibia protruded through a wound in front about half an inch long. There was very troublesome venous hemorrhage, and the wound pulsated violently. Patient still suffering from shock, the splint was applied at once and a large fenestra cut. Wound treated with Lister's antiseptic dressing; injected with strong acid carb., and pressure applied. This checked the hemorrhage after about twenty-four hours.

13*th*. Still strong pulsation all around the wound. Firmly bound down with oakum to support.

14*th*. Pulsation gone. Lac plaster excoriates, and is left off.

*June* 1. Doing very well; very little pain and good appetite.

3*d*. Considerable pain; pulse 120; skin hot.

5*th*. Sharp chill; ordered quinia.

29*th*. Has had no more chills; wound nearly closed.

This patient subsequently had necrosis, and the dead bone becoming loose before the union of the surrounding bone was strong, I removed it through the fenestra in the splint. Patient was discharged cured in about six months from accident.

This case illustrates what may be done with the gypsum splint, with careful watching of the state of the circulation. I confess to having felt some fear, and to having been strongly tempted to remove the splint and place the leg in a fracture-box when I saw the whole surface exposed in the fenestra throbbing strongly. I pinned my faith, however, to the circulation in the toes and the absence of grave constitutional symptoms. This case also illustrates how an operation for necrosis may be performed through a fenestra in a splint earlier than otherwise, as previously alluded to.

Case XII.—Jno. B., age 27; healthy labourer. On March 27 his leg was caught between two heavy stones. Sharp hemorrhage; fracture compound and comminuted; great contusion and swelling; opening on each side, opposite fracture, both leading down to bone, and from the external one is sharp hemorrhage; piece of fibula, one inch long, removed from external wound; fracture of tibia and fibula low down; patient's general condition good; pulse 90; plaster splint (interrupted variety) applied within two hours from date of injury; Lister's antiseptic dressing used. The pulse in this case did not rise above 104, nor the temperature above 100°. He took no anodynes, and always said he felt comfortable. There was very moderate discharge, not averaging ʒj a day. He was kept in bed about five weeks, and was discharged cured, August 7, able to walk quite well.

This case is noticeable for the absence of any constitutional symptoms whatever, and yet it was a case that many good surgeons would have condemned to amputation.

Case XIII—Owen K., age 26, was run over April 21, by wheel of loaded coal-cart. Free hemorrhage; fracture of tibia and fibula at middle; probe passes between fragments, and touches tibia at point of fracture; wound about one inch long over fracture of fibula. Put up within twelve hours in "interrupted" splint. Lister's dressing used.

*May* 1. No marked constitutional symptoms; pulse less than 115 and temperature less than 101° since last note; leg dressed every two days; discharge very moderate.

*June* 1. New splint, not "interrupted," but simple fenestrated; patient allowed to go on crutches; superficial abscess has developed near wound. Complete cure in five months.

The "interrupted" splint was used here at first because of the contused condition of the soft parts on the inner side of the leg, which it was desirable to have under observation.

Case XIV.—Daniel R. Patient was run over on Nov. 3, by a loaded truck, the fore wheel passing over his thigh, and the hind wheel over the leg of same side. He is found to have a compound fracture of the right femur, near its middle—the wound being entirely over the seat of fracture. Wound small; probe touches bone. There is also simple fracture of right tibia and fibula, near the middle. The leg was put up in a gypsum splint, extending nearly to the wound, the leg being slightly flexed upon the thigh; after this had hardened thoroughly, it was found that traction upon it caused no pain of account, and the thigh was enveloped in a continuation of the splint—traction being made from the lower part. The wound discharged freely for some days a dirty and offensive pus, but it closed after three weeks, and January 8 the splint was removed, and good union of the tibia and fibula found, with good position. The union of the femur was also good; but there was some anterior deformity caused by the upper fragment. The length I could not get by comparison, as there was an old unreduced luxation of the head of the femur of the same side upon the "dorsum ilii."

This case shows that in fracture of the femur, complicated with a fracture lower down, the surgeon need not necessarily give up extension—for this man would allow all the extension that two men could make by pulling upon the splint below—the traction seeming to be mainly received by the anterior and lower surface of the thigh. This probably caused the anterior deformity of the upper fragment, which, in a similar case, I should take special measures to prevent. That the traction did no harm to the fracture of the leg, is shown by the result. The principle is, of course, applicable to any number of fractures not *too* close together, viz., first extending the splint over the most distal one, and then using the continuity thus given in manipulation for the reduction of the next.

Case XVII.—Ann H. was struck March 2, on right thigh, by a piece of machinery which flew from a revolving wheel. She says the thigh bent so that the right knee lay upon the middle of the sound thigh. I found a fracture at the middle, with shortening 1¼ inch, and great swelling. There was a small wound on outside of thigh, through which a probe touched bone.

*March* 3. Plaster splint applied; large fenestra cut over wound.

16*th*. Patient trying to get out of bed alone, fell, and broke the splint, which was then removed. The so-called "Bucks extension" was then applied for two days. Patient had no constitutional symptoms whatever. The discharge from the wound has been trifling.

18*th*. Splint reapplied.

19*th*. Considerable œdema of left labium, and some scalding in micturition.

21*st*. Œdema gone; patient sits up all day, but is awkward in using crutches. Discharged cured May 22, with ⅛ inch shortening.

The œdema in this case was the first I had seen, and it resulted apparently from the pressure of the upright bar during the application of the splint, as it was in the labium of the opposite side, and not where it could be explained by pressure of any part of the apparatus.

Case XVIII.—James H. Compound fracture of right femur, just above the middle. He was caught between a coal-box and a coal-cart, which was backing up to it, and crushed. There was a large opening over the apex of Scarpa's triangle, admitting two fingers down to the broken bone; strong tendency of upper fragment to project anteriorly; lower fragment was brought into line by raising the knee and making extension; gypsum splint put on in this position, while patient was relaxed by shock of accident; large fenestra cut over wound and leg swung from cradle. This patient made a speedy recovery, without having had ℥j of discharge from the wound, and with a pulse never above 96 and temperature never above 100°. Result, good union, with ¾ inch shortening. The wound was dressed simply by oakum, bound on.

This case is, in some respects, the most remarkable of all, from the crushing nature of the injury, the extent of the wound, the freedom from constitutional symptoms, and the union of the wound almost by first intention.

Case XXIII.—David H. Patient's leg was run over by wheel of truck. Fracture of tibia and fibula at junction of middle and lower thirds; bone protruded; much venous hemorrhage; opening small; tissues emphysematous and distended with blood up to knee. Was put up at once in "interrupted" splint. Pulse never above 96; temperature not over 102°. Patient out of bed in three weeks. Good union.

This is another case of absence of constitutional symptoms. In this case, after the splint had hardened, there was some deformity, which was remedied by cutting the connecting band, rectifying the position, and applying a new connecting piece over the old one, showing that in a case of this kind it is not necessary to reapply the apparatus from the beginning.

Case XXV.—James M., age 9. December 7, a heavy iron fly-wheel fell on both legs, producing a compound, comminuted fracture of the right tibia, with a wound about two inches square, over and communicating with it; also a simple fracture of the left tibia, with an immense lacerated wound on the outer and anterior surface of the left leg. This fracture became compound a week afterward. Both legs were put up at once in the "interrupted" variety of the gypsum apparatus. He had tolerably severe constitutional symptoms once, resulting from the suppuration of a large extravasation of blood which was on the outside of the right leg, and was opened. He had necrosis of the right tibia, but subsequently made a complete recovery in both legs, and was able to walk and run perfectly.

Case XXVI.—Jas. McD. Patient fell, October 30, and struck on an iron chain, breaking his right tibia and fibula at junction of middle and lower thirds. A large piece of bone, nearly the whole thickness of the tibia and three-quarters of an inch long, was removed from the wound. Tissues boggy—leg shortened one inch—put up Nov. 5 in interrupted splint. He made an excellent recovery.

Both the following cases were under the charge of Dr. J. D. Bryant, late House Surgeon at Bellevue Hospital, and in both the author assisted Dr. B. in putting on the apparatus.

Of the cases given in detail, Nos. 7, 8, 10, 12, 13, 14, 17, and 18 were under the author's personal care, and he can vouch for the correctness of the particulars.

Another and more recent case may be adduced, illustrating the application of this apparatus to a fracture not yet alluded to. The history of this case in brief is:—

Thomas C., age 25, single, plumber by occupation, on November 7 fell from a ladder about forty feet, striking on the right side of his head. On rising, he found that his head fell forward upon his chest, and he had no control over it. He had also great pain in the back of the neck. He received treatment, but got no better and came to Bellevue Hospital, November 28, complaining of this pain and loss of control over his head, with constant fear of moving around. The injury was diagnosed as fracture of the transverse process of one or more cervical vertebræ. Patient was kept in bed, as quiet as possible. December 11, somewhat improved. Can bend his neck slightly forwards and laterally, but uses his hands to raise his head from the pillow. He was then put up by Dr. Cushing in a gypsum apparatus made by placing a wide folded strip of "soaked blanket" down the back of his neck and fastening the head to it by circular turns of a plaster bandage around the forehead. The lower end of the strip was secured to the back by similar turns of bandage around the body and across the shoulders, making a sort of jacket with armholes. This apparatus afforded him entire relief from pain in moving about; and from the constant fear that something would happen if he moved suddenly. The apparatus was removed after about six weeks and the man discharged cured.

In conclusion, we will state, in a few words, what we have endeavoured to prove, and to rehearse the means by which we have endeavoured to prove it. I subjoin them arrayed in a tabular form:—

I. To show that the results are at least equal to those of any other instrument, and in some fractures better. To support this ground I adduce

192 cases of simple fracture (50 being of the femur) and 26 cases of compound fracture.

II. That union is not delayed by this splint, as alleged by some. On this point bear 313 cases, 192 of the gypsum apparatus and 121 of the starch, felt, leather, and pasteboard.

III. That the splint may be with safety applied at once in fractures of all bones. In support of this point are 176 cases in which this splint was applied within forty-eight hours from the date of the accident, of which 69 are simple and 23 compound fractures (gypsum apparatus), 23 are simple fractures (felt splint), and 61 simple fractures treated with gypsum splints, of which I could not get complete details as to results, the patients having been discharged from the hospital wearing the splints, etc., but whose records are given beyond the date when we may be sure that no untoward result could arise dependent upon the early application.

IV. To show that great contusion of soft parts, swelling or extravasation of blood do not, of necessity, contraindicate even its immediate application. Here belong 32 cases of simple fracture and 23 of compound fracture thus described.

NOTE.—The author desires to acknowledge the valuable assistance of different members of the present and late House Staff of Bellevue Hospital in preparing this paper. The names of several of them are indelibly associated in hospital memories with the introduction and progress of the gypsum apparatus, and more than one of the visiting surgeons have expressed the belief that the remarkable success attending the use of this apparatus was dependent quite as much upon the skill and intelligence shown in its application as upon the inherent merits of the apparatus itself.

## ART. V.—*On the Impracticability of restoring to its Full Length a Thigh-bone shortened by Fracture, as apparently demonstrated by Experiment.* By H. F. MONTGOMERY, M.D., one of the attending Surgeons to the City Hospital, Rochester, N. Y.

A MUSCULAR man, 28 years of age, came under my care April 1, 1872, who had just fallen from a height of thirty feet. He had fractured the frontal bone at the root of the nose, and had also fractured the left thigh-bone at the junction of the middle and lower thirds. The man survived his injuries four days.

The fractured thigh was treated by adhesive-plaster extension, with two weights over two pulleys, with the foot of the bed raised ten inches higher than the head. The combined weight was eighteen pounds. Sand-bags were not used, as I consider them useless, if not detrimental. A fractured thigh, extended to its extreme capacity of extension, if unobstructed, moves at the hip-joint more readily than at the place of fracture.

The two pulleys, arranged parallel with each other at the same level, and four inches apart, tend to prevent rotation of the limb.

Short splints of thin board were applied to the thigh (probably unnecessary).

When first seen, the fractured limb was about two inches shortened. The weight of eighteen pounds, continued for four days, produced but slight effect. Had my patient survived, I should have increased my extending force by applying as great a weight as could have been retained by the adhesion of the plaster.

After the death of my patient, I wished to determine whether it were possible, by any practicable power, to extend to its full length the shortened thigh, and to bring its fractured surfaces in contact.

Eleven hours after death, the muscles of the fractured thigh were separated, without cutting across muscular fibre, down to the bone. We found a transverse fracture, with one and one-fourth inches lapping. The muscular development was splendid. The body was fixed by a rope between the legs, fastened above the head to the wall, and another strong rope was placed around the ankle of the factured limb. Continued and repeated extension was made by four men together (applying a force probably equal to a thousand pounds over a single pulley). The limb could be brought down by this means to half an inch lapping of the ends of the bone, but no further. The lateral pressure of the extended muscles was observed to be great, quite sufficient to prevent displacement, if the limb could be brought down to its full length, either in an oblique or transverse fracture.

We then applied to the extending cord, a weight of one hundred and twenty-six pounds over a pulley, and left it upon the limb from four o'clock P. M. to nine o'clock A.M. (seventeen hours). The bones were then found lapped one-fourth of an inch. From the above we may conclude that a transverse fracture of the thigh-bone, with slightly shortened limb, will produce greater deformity than an oblique fracture with the same shortening.

Some months ago I had an opportunity to see and feel the end of the bone in a transverse fracture of the thigh in a living subject, three months after the injury, where there was a shortened limb, where union had taken place, and where the greatest weight that could be retained upon the limb had been constantly applied for seven or eight weeks. It was a case of compound fracture, where the patient eventually recovered with a slightly shortened limb, and with adhesion of the extensor muscles of the leg to the thigh-bone. In this case we found that the portions of bone which lapped had been absorbed down to the medullary portion, on the side where they were in contact, and had thus formed two flat surfaces which had united.

I venture the opinion, that in most, and probably in all, cases of fracture of the femur, whether transverse or oblique, *with shortening,* the fractured ends of the bone cannot be placed in exact apposition by any force which can be safely applied to living tissue.

It is admitted by most modern writers on surgery, that shortening of the limb in fracture of the thigh is to be expected, and is generally found after proper treatment. Would it not be more correct to say, it is always found (when produced by a fracture), because a shortened thigh-bone *cannot* be fully extended to its normal length after the broken ends of bone have passed each other?

---

## ART. VI.—*Cases of Stricture of the Rectum treated by Different Methods: one of them by Electrolysis.* By WM. R. WHITEHEAD, M.D., of New York, Physician for Diseases of Women at the Northwestern Dispensary.

THE unsatisfactory results which so often follow the ordinary treatment of stricture of the rectum, is a sufficient reason to call attention to the following cases. They illustrate in a comparative manner the value of certain modes of treating this disease, which is confessedly a very distressing one, and exceedingly difficult to manage. It is proper, however, to preface the relation of these cases by the statement, that I believe that the most effectual way to cure fibrous stricture of the rectum is by a thorough division of the stricture posteriorly, and by dilatation afterward by means of elastic pressure, such as I have described in a preceding number of this Journal (Jan. 1871).

CASE I.—Mrs. F., a very intelligent lady about forty-two years of age, consulted me at the suggestion of Dr. Wm. George Thomas, of Wilmington, N. C. For a number of years she experienced much distress and difficulty in relieving her bowels; but was not aware of the presence of a stricture of the rectum until examined by Dr. Thomas about twelve months previous to the time at which I first saw her. He was of the opinion that the stricture was not cancerous, and this opinion was strengthened by a microscopic inspection by Professor Leidy, of Philadelphia, of some of the dejected matters which were sent to him for examination.

On the 15th of May, 1871, after she was thoroughly etherized by Dr. F. H. Deems, I made a careful examination of the rectum and contiguous parts. There was a tight stricture of the rectum more than an inch in length, and which extended from opposite the lower part of the Douglas cul-de-sac upward, and above it. A considerable mass of indurated tissue formed the stricture anteriorly, and occupied a very extensive relation with the peritoneal covering of the rectum. Mrs. F. informed me that she had for ten or twelve years worn a pessary in the vagina, and that she had once worn this instrument about a year without removing it. She was disposed to attribute the stricture to inflammation caused by the long-continued pressure of the pessary against the rectum, and I am quite inclined to adopt this opinion. The case appeared to be a formidable one for operation, and not being at that time so well convinced of the necessity of a thorough section of the stricture as I am at present, I was undecided whether to cut or rupture it.

However, believing it necessary to resort to either one or the other of these procedures, in order to obtain subsequently a desirable degree of dilatation with the elastic pressure, which I believe to be the safest method of dilatation, and an effectual one for the treatment of most cases of stricture of the rectum, on the 18th of May, assisted by Dr. J. B. Landeta, Dr. Francis H. Deems, and my present clinical assistant, Dr. A. Landeta, I ruptured the stricture with Sims's dilator, and completed the rupture with my index finger, having directed my force principally against the posterior wall of the gut. The rupture was made without difficulty, but I was apprehensive about the extent of this rupture and the danger of laceration of the rectum. This danger I do not believe to be overrated; and since I have quite satisfied myself about the safety with which a deep incision of the rectum may be made posteriorly, I prefer incision to rupture of a stricture except when seated quite near the anus. After the operation a piece of sponge about the size of a small orange and with a string attached was readily passed up the gut beyond the previous seat of stricture, so that the part could be well seen with Sims's speculum by all present. At the time of this operation, I was unaware of the existence a short time before, of a slight subacute peri-uterine inflammation. The knowledge of this condition gave me considerable solicitude about the safety of the patient. She had some peritonitis, which was controlled however with morphia in fractional doses given at intervals. The use of the duck-bill speculum, caused a fissure of the anus, which was cured by rupture of the sphincter ani muscle with the fingers. The peritonitis interfered with the immediate after-treatment by dilatation, but after six or eight days she used very effectively the instrument which I have recommended for elastic dilatation, but which has been so modified as to be much preferable to that first used. Four, five, or six rubber condoms one over the other, and properly adjusted to the instrument, will offer as much resistance as a stout Barnes's dilator, and are much easier to introduce either by the patient or by the surgeon. The probe which is attached to the instrument, and which is inside of the rubber bags, should be made of whalebone, and should be of the requisite degree of flexibility, and covered with a piece of rubber tube about the eighth of an inch in diameter. The tube protects the whalebone from the water, which would soon soften it and make it worthless as a director. There is no difficulty about the use of this instrument in the hands of an intelligent patient when once shown how to adjust properly the condoms to the instrument, and to its directing whalebone staff. A single rubber bag sufficiently stout would appear to be much preferable; but attempts have been made by instrument-makers of this city to make such bags for me for this purpose, but there has always been some defect about them, which made them dilate very unequally, and burst at one of the seams or elsewhere. Rubber condoms or capotes can be obtained anywhere; they are used by oculists for ice-bags, and, introduced into the natural cavities of the body and distended with ice-water, are useful for stopping hemorrhage. Half a dozen condoms, properly adjusted one within the other, and distended with water by means of a Davidson's syringe attached to a tube with a stopcock, I have found to be a good way to treat vaginismus after section of the vaginal sphincter, or even when cutting of this sphincter is not required.

It is very important to wash out the rectum three or four times a day with carbolized injections. A lacerated wound or cut of the mucous membrane of the rectum, constantly bathed with excrementitial matter and with pus, becomes without this means a great source of danger from septicæmia. During the latter part of July I received from Dr. Thomas a letter from which I make the following interesting extract:—

> "The lower part of the stricture is decidedly relieved, the upper part not so completely. She has devised a modification of your capote dilator which struck me with force, and I think will answer an admirable purpose. She puts a silk bag between the rubber capotes, and ties them to the guiding staff. The silk bag may be stretched to its utmost capacity, and is firm, and is well protected from both the injected fluid and the secretions of the rectum by the condoms. It operates well, and upon trial I think you will be pleased with her ingenious improvement. She has used the dilator daily since she left New York. I advised her to use it once every three or four days only, during two to four hours at a time, and to gradually enlarge the silk bag."

The width of the silk bag, a paper model of which Dr. T. sent to me in a letter, is two and a quarter inches. In a letter from the patient dated December 16th, 1871, more than six months after the operation, she stated that she uses the dilator quite frequently, and that her physician recommended her not to use it oftener than once in two or three weeks. She stated that her appetite was excellent, and that she was able to attend actively to her household matters; she had gained flesh, and all of her friends had observed and remarked upon her improved condition. We believe that a rather frequent, but judicious and long-continued, use of the elastic dilator in such cases to be very necessary.

CASE II.—Last summer Dr. A. Worthington, of Ontario, Canada, consulted me by letter relative to Miss M., who had stricture of the rectum of a number of years' standing, and which was complicated with a recto-vaginal fistula. The parents of the lady, by advice of Dr. W., their family physician, requested me to visit her at her residence near the village of Wroxeter in Canada West, and, if necessary, to perform such an operation on the stricture as the necessities of the case might require. Miss M. was thirty-four years of age; I found her anæmic, greatly emaciated, exceedingly inanimate and taciturn in her manner. I was much discouraged by the appearance of her general condition. Menstruation had ceased about two years before she consulted me, but previously it was regular. During two or three years there were discharges of bloody water from her bowels, together with lumps which her mother said resembled fat meat. During a period of four years she had occasionally hemorrhages from her bowels; altogether nine or ten in number. During the last three years her health had gradually declined. July 12th, 1871, the day on which I first saw her, assisted by Drs. Worthington and Byron Crandell, of Clifford, she was etherized and I made a careful examination of the rectum, which revealed by the vaginal touch a very indurated cervix and a recto-vaginal fistula on a level with the posterior lip of the cervix. The fistula admitted with some constriction the end of the index finger. The uterus was normal in size, but bound down posteriorly by adhesions. The rectal touch discovered two strictures with the recto-vaginal fistula between them. The lower stricture was inconsiderable in size, and was situated immediately above the sphincter ani muscle. The upper and principal stricture was seated three inches higher up the gut. The walls of the rectum between the strictures were firm, rigid, and posteriorly were slightly *nodulated* and suggestive of an interstitial, malignant deposit. The upper stricture admitted the end of the index finger. While the patient was under the influence of ether and in the semi-prone position, I tore the stricture posteriorly with the index finger of the right hand hooked into it. With two fingers of each hand I ruptured the sphincter ani muscle, and at the same time the indurated tissue of the rectal wall just above the sphincter. I then felt a fibrous band running somewhat obliquely across the posterior part of the upper stricture. I cut this band with a small knife which was concealed within, and could be projected at will from, a flattened sheath. The whole stricture immediately yielded, and by means of Sims's speculum, nearly the whole of the lower part of the rectum was plainly brought into view. The cut was made on the median line and posteriorly. There was not a teaspoonful of blood lost during the operation. The danger in this case was from peritonitis and from septicæmia. The first I believed could be controlled by the appropriate use of morphia; the second could be prevented by washing out the rectum several times a day with carbolized injections. During the first twenty-four hours she was inefficiently nursed, and took the morphia very irregularly. She was allowed several times to sit up and strain at stool for one or two hours at a time, after which she was very much exhausted. When I saw her the next day, I urged the parents not to allow her to sit up, but to have a bedpan put under her when required, and to procure immediately, if possible, an experienced nurse. During the second night after the division of the stricture she had an alarming collapse, and vomited once. She was resuscitated by the application of hot bricks to her feet and by teaspoonful doses of brandy and water. I remained at the house with her during the night and part of the following day.

On the 14th of July a good nurse was obtained, and the pulse, which had been at 140, under the influence of a solution of sulphate of morphia regularly given fell to 120, and the patient's condition was better. There was not so much tenderness about the lower part of the abdomen. The mother persisted occasionally in giving the patient her medicine, and instead of a teaspoonful of a solution of morphia which contained the one-eighth of a grain of this substance, gave by mistake a teaspoonful of a saturated solution of carbolic acid. This was used largely diluted with water to wash out the rectum. Dr. Crandell was in the room at the time that this mistake occurred, and Dr. Worthington and myself were in the adjoining room. The whole interior of her mouth was blanched, and she experienced very great distress in swallowing some milk which I requested her to drink immediately. After a few hours the pulse ran very high, and the distressed feeling about her mouth and throat increased, and she died about twelve hours after the swallowing of the carbolic acid, which contained only five per centum of water. I regarded this case as a very unfavourable one, and which possibly under different circumstances I should have declined to operate upon. But it was quite evident that her only chance to obtain any relief was in a careful division of the stricture or by its rupture in the manner in which I effected it, to be followed by methodical dilatation with the rubber bag distended with water. She had commenced under better nursing rapidly to improve, and would I believe have recovered had she not swallowed the carbolic acid.

CASE III.—The following case is interesting from the fact that several attempts were made to disperse, by electrolysis, the interstitial deposit which formed an indurated mass that caused the stricture of the rectum.

Mrs. K. consulted me at my clinic at the Northwestern Dispensary more than eighteen months ago, for stricture of the rectum. The stricture admitted with difficulty the end of the finger, and extended from opposite the Douglas cul-de-sac, upward above it, and beyond the reach of the finger. The stricture was unmistakably the result of syphilitic ulceration of the rectum, and the patient had a secondary eruption on the skin. This eruption, under appropriate treatment, disappeared, but reappeared once or twice, and she, at present, has an ulceration of the leg of syphilitic appearance. Soon after I first saw her, she was etherized, and the stricture was cut with a curved bistoury anteriorly, and posteriorly at its lower part; but as I could not reach the upper part of the stricture with my finger, the operation was necessarily incomplete. The knife was securely wrapped, except near its point, with cotton, and the cutting part was well protected by the end of the index finger of the right hand. Attempts were irregularly made to dilate the stricture with the rubber bags, and by forcible dilatation with the finger. I held in reserve, however, this case for another cutting operation, and decided that I could safely make a very extensive incision, if required, on the posterior wall of the rectum. My opinion in this matter was strengthened by a careful examination of two or three cadavers with reference to the relations of the peritoneum to the rectum. Besides, Professor Darling, of this city, professor of anatomy in the University Medical College, kindly called my attention to a dried specimen which well illustrated these relations in a manner usually overlooked by anatomists. An incision made posteriorly, at any point along the median line, from just below the promontory of the sacrum, and between the folds of the meso-rectum to the sphincter ani, will not wound the peritoneum, or be likely to be followed by hemorrhage. But the peritoneum covers the sides of the rectum quite low down, and the peritoneal duplicature of the utero-sacral ligaments in relation also, anteriorly with the rectum, may, especially in partial prolapsus of the uterus, draw the peritoneum unusually low down on the sides of the rectum.

I was attracted to the use of electrolysis in the treatment of strictures of the urethra by Tripier's article in the *Arch. Gén. de Médecine*,[1] and besides, I was invited by Dr. Robt. Neuman, of this city, to see with him a patient with stricture of the rectum, and to which he made one application of electricity with Stöhrer's battery of sixteen elements, and subsequently used my dilator for elastic pressure. I am not quite sure which electrode Dr. Neuman applied to the stricture. As an immediate result of this application the stricture was considerably dilated. Quite recently, a post-mortem examination of the case afforded Dr. Neuman an opportunity to exhibit to the New York Pathological Society the rectum of this patient. It seems that, having obtained some relief, she became careless and neglected herself; finally she got worse, and had fecal fistulæ to form. The specimen shown to the Society interested me exceedingly, but I was unable to draw any definite conclusions from the appearance of this specimen, as to the value of electrolysis in the treatment of strictures of the rectum. However, I had, after having seen Dr. Neuman's case, obtained Dr. Wm. B. Neftel's co-operation in the electrolytic treatment of the stricture of Mrs. K., the subject of the third case, and which I am now reporting. The electrolytic treatment of this case extended over a period of one month, and during this time four applications of electricity were made. All other kinds of treatment were purposely avoided, so that the electrolytic action might be well tested. The patient was not etherized, and the first application was made with a new galvanic battery of Curt Mayer, of New York (a platina zinc battery). A cathode made for the purpose, consisting of hard rubber and a solid brass cylinder rounded at the end, was introduced by me partially into the stricture. Dr. Neftel commenced with one element, and increased gradually, one by one, to twenty elements. There was a slight and gradual increase of pain. A current of twenty elements was maintained for fifteen minutes. I repeatedly examined the part during this time. The applications lasted about half an hour. There was an immediate dilatation of the lower part of the stricture only.

---

[1] La Galvano-caustique Chimique, par le Doct. A. Tripier, Arch. Gén. de Méd. 1866, vol. i. p. 18.

On the 16th of January, 1872, a week after the first application, another one was made with Remak's battery. Dr. Neftel thought that it would be well to isolate with shell-lac, or hard rubber, the rounded end of the brass cathode. It was isolated at its end with shell-lac, and introduced by me into the stricture. The anode, in the shape of a flat disk, and separated from the skin by a piece of wet cloth, was, as in the preceding application, applied to the hip, and shifted about from place to place, when the heat developed at the anode, or positive pole, became unendurable. The application began with two or three elements, and was gradually increased to fifteen, at which number the current was maintained for five minutes, with a deflection of the needle of the galvanoscope of fifteen degrees. The current was then gradually, by the addition of one element at the time, increased to twenty-one elements, as denoted by the position of the winch in the current-selector. A current of twenty-one elements was used during five minutes; it was then interrupted, and I examined with my finger, and found that the upper part of the stricture was considerably dilated. The circuit was again closed, and the cathode reapplied to the central part of the stricture. The applications this time lasted altogether fifteen minutes, and the patient afterward did not feel uncomfortable. Possibly it may be well to observe that Dr. Neftel used the elements of Siemens, which were substituted for Remak's elements, and were contained in the box of Remak's apparatus. It appears to me that, for accuracy of observation, it would be desirable to adhere to the use of one apparatus.

January 24, a third application was made. Previously the patient stated that her bowels were more easily moved, and an examination revealed that the stricture was more dilated. A brass cathode, isolated at its end with hard rubber, was introduced into the stricture, and the anode applied to the external part of the thigh. Twenty-three elements of Siemens were used during twelve minutes, with a deflection of twenty-three degrees of the needle of the galvanoscope. Twenty-one elements were used for eight minutes longer. A considerable quantity of frothy mucus, caused by the evolution of hydrogen at the cathode, issued from the rectum. The applications this time lasted altogether twenty minutes. After the discontinuance of the current I found that the upper part of the stricture was much dilated, but that the middle part was still constricted. A week later, another application of electricity was made much in the same manner as this one, but of which I failed to keep any notes. I decided not to use dilatation after these applications, but to permit a few months to elapse before I examined her. I believe this was also Dr. Neftel's suggestion.

April 16, 1872, she came to the Northwestern Dispensary, and was carefully examined by my clinical assistant, Dr. A. Landeta. The stricture with difficulty admitted the end of the index finger, and was quite as tight as before the electrolytic treatment.

Possibly it may not be out of place, in connection with this case, to attempt to define what is meant by electrolysis as applicable to the dispersion of certain tumours, or of the induration of the tissues, as in stricture. The different effects of the two electrodes on the living tissues should be distinguished one from the other. These effects are modified by the use of batteries of great electro-motor power, or of feeble power, or composed of many small elements, but of great tension. It seems to me that a multitude of different circumstances influence the effects of the currents. The kind of electrode used; such as needles, blunt or flat electrodes, and these last with or without moisture, modify the effect. The moving of the electrodes, and, if needles be used, the position in which they are stuck into the flesh, whether parallel or in a line continuous with each other, are also worthy of attention. The effects must necessarily differ widely, because, if, as in the last case, the needles intersect, or are continuous with each other, especially should their points be near together, we may have a bad slough of the tissues in the place of a resolutive or electrolytic action, such as is supposed to occur at the cathode of a galvanic current, under conditions favourable to the development of the peculiar effects of the negative current at this pole. It is not at all my object to discuss the subject of electrolysis, but I, probably in common with many others, would like to know what is its practical value, and also something about the right indications for its use, and the proper manner to develop the electrolytic action.

It is necessary, it seems, to distinguish well the decomposing power of the current from its heat-producing power. The chemical and decomposing power, or electrolytic effect, is supposed to take place at the cathode, and is caustic in its action, but caustic after the manner of alkaline caustics. The heat-producing power of the current is developed at the anode, at which may be produced a disorganization of the tissues immediately around it, similar to that caused by the actual cautery. If the anode be a thickly plated gilt needle, thrust into the tissues, it will be corroded by oxidation, and there may be considerable difficulty in withdrawing it. The disorganization of the tissues immediately around the needle will be proportional to the greater or less intensity of the current. If the cathode, or negative electrode, be also a needle, and thrust into the flesh, no corrosion of this needle occurs, but soon the tissues around it will become emphysematous by the escape of hydrogen. An alkali is evolved at this electrode, and an acid at the other. It would seem that there occurs a mechanical disassociation of the tissues by the action of the escaping hydrogen, and a dissolving and fluidifying effect caused by the alkali liberated at the cathode. If the anode be a plate or disk, the heat may be so great as to burn the patient severely. It should be recollected that the positive electrode is at the end of the wire which leads from the negative metal, and the negative electrode at the end of the wire which leads from the positive metal, and which would be the zinc, if this be used, in a zinc and copper battery.

The direction of the positive current is from the metal oxydized to that which is not, and the direction of the negative current is the opposite. Tripier's experiments on strictures of the urethra gave immediate results which were seemingly satisfactory. The strictures in each case after the application of the cathode were enlarged, but their condition a few months afterward is not stated. He concludes that the negative galvano-cauterization, or that obtained with the cathode, is an excellent substitute in certain cases, for the caustic of Filhos, and that the cauterization obtained with the anode may replace that of the strong acids, or the actual cautery. He claims that the cicatricial tissue which results from cauterization with the cathode is soft, thin, and not resilient, and that the inodular tissue produced at the anode has the usual character of such tissue. The greater the electro-motor force of the battery, the more rapid, and the more painful will be the cauterization. Whichever electrode is selected for cauterization, the effect would be, apparently, to burn a larger hole through the stricture, and it seems to me that dilatation should be used afterward in order to obtain any benefit from this mode of treatment.

Case IV.—As an example of stricture of the anus and lower part of the rectum, caused by the injudicious application of caustics for the cure of hemorrhoids, the following case may prove interesting.

Through the recommendation of Dr. Horace P. Farnham, of this city, a gentleman from one of the Western States recently consulted me for an intolerable itching about the anus, and for great difficulty in evacuating his bowels. There were hard and slightly elevated folds of the integument immediately around the anus, and on introducing the finger into the rectum, the tissues about the anus felt very much indurated, and formed a tight stricture at the anal orifice. On remarking to him that probably some caustic application had been made to the parts, he replied that a few years ago he was treated for hemorrhoids by several applications of caustic, and that he had since noticed a gradually increasing difficulty in relieving his bowels. I told him that gradual dilatation was, in his case, the only safe and effectual means of relieving him, that division of the sphincter ani, at present at least, was unnecessary, and that dilatation would also afford him relief of the itching. I advised him to have a number of smooth and slightly conical plugs, about two inches long, made of maple wood, each with a handle, and also with a flange, to prevent it from slipping too far into the rectum. These plugs should be graduated in size, from that of the finger to that of the largest bougie.

## ART. VII.—*Fibrous Tumour of the Base of the Tongue.* By J. F. FITTS, M.D., of Francestown, N. H.

DR. J. H. POOLEY, of Yonkers, N. Y., reported in the April, 1872, number of this Journal (p. 386) a case very similar to one which came under my own observation, and such cases being rare, I offer the following report of it. Dr. Pooley speaks of the tumour in his case as unique, especially as regards situation—the tumour in my case was in this respect precisely similar.

Miss H., aged 30, sent for me about the first of May, 1869, for some slight affection of the throat, the result of a sudden cold. In examining the throat while depressing the tongue, I noticed a tumour rising up at its base, of about the size of a filbert. The patient was entirely unaware of its existence, and it might have remained there unnoticed for months but for this chance examination. There had been no pain, soreness, dysphagia, dyspnœa, or hemorrhage to call attention to any lesion of the throat or tongue. In fact, she had never had any trouble with her throat, except such as resulted from taking cold. The tumour was situated exactly in the median line, on the base of the tongue, and so far back that it was somewhat difficult to pass the finger behind it. It was exceedingly hard, incompressible and immovable. It was sessile, or at least, if there was any pedicle, it was so broad that it was not easily made out. Examination caused some pain but not at all severe. The case was under my care until the following November, when by my advice she went to the Massachusetts General Hospital for a thorough laryngoscopic examination, and operation if deemed advisable. In the mean time, the tumour had steadily increased in size, until on opening the mouth and protruding the tongue, and without using any depressor, it filled almost the whole of the fauces. It had caused but very little trouble, perhaps no more than might have been produced if the imagination were only worked upon.

I accompanied her to Boston, but as she could not then be admitted into the hospital, we returned home without anything being done, save a superficial examination by the resident physician and one surgeon, but no opinion was advanced. Subsequently, in January, 1870, she returned to the hospital, was examined and operated on by Prof. Bigelow. The tumour was removed *en masse*, with the écraseur, the patient being under the influence of ether. At the time of its removal, the tumour was the size of a pigeon's egg.

I was not present at the operation, but I learned that there was no alarming hemorrhage, and the patient made a good recovery; was at home in the course of three or four weeks, and able to attend to household duties.

The tumour was pronounced fibrous, possibly fibro-recurrent, but to this date there has been no return. No treatment with a view of reducing the size of the growth was attempted, save for a short time the syr. ferri iodidi was administered, but with no perceptible effect.

On taking charge of this case, I was considerably puzzled, as, on consulting the standard authorities, I could find very little in regard to tumours of the tongue, and *that little very unsatisfactory.* Two or three of the physicians in the neighbourhood had never seen anything like it, and several of my acquaintance to whom I mentioned the subject had never observed such a case. Under the circumstances I was led to believe that a tumour in this situation was very rare. Indeed, I found only two allusions to the subject of tumours and growths of the tongue. One was a case reported in the *Boston Med. and Surg. Journal,* the date of which I cannot recall, but possibly the same which Dr. Pooley has transcribed into his paper. The other, more satisfactory, was by George Duncan Gibb, "Diseases of the Throat and Windpipe," second edition, p. 342, London, 1864. Under the head of "Tumours and Growths" of the tongue, Dr. Gibb says:—

> "In most of our modern works there is scarcely even a mention made of tumours originating in the tongue, yet cases are presented to our notice every now and then. In the museum of the College of Surgeons is a fatty tumour (No. 190), removed from the substance of the organ. Mr. Paget removed an oval bilobed tumour from the tongue of a young man, the size of a small marble; it was near the apex, and had been growing for three years.
>
> "In July, 1862, I removed a fibrous tumour the size of a small marble, with the aid of the laryngeal mirror, from the left side of the back of the tongue of a married lady, which caused great inconvenience and suffocative attacks, from its coming in contact with the left side of the epiglottis."

This last case more nearly resembles the one reported by Dr. Pooley and my own, than any of which I have seen a description. Except in *exact* situation and size, they would seem to be very nearly identical, only my case had no characteristic symptoms, and Dr. Pooley's was marked by severe hemorrhages.

Dr. Gibb then gives an account (with an illustration) of a case of congenital tumours of the tongue, three in number.

> "The smallest was the size of a pea; the next as large as a shilling, and the largest two and a quarter inches in length. Each tumour was attached by a narrow pedicle. When in *situ*, the anterior tumour lay upon its dorsum; speech was scarcely impaired, and there was no difficulty in mastication."

The largest one was removed and proved to be fibro-cellular in character.

The case I have reported seems to be precisely similar to that reported by Dr. Pooley, except in size, and the fact that his was accompanied by distressing symptoms and alarming hemorrhage. I think, however, that had an operation been delayed sufficiently long, the same symptoms would have been developed in my case.

## ART. VIII.—*Carbuncle over the Cervical Vertebræ, in a Patient eighty-two years of age, successfully treated.* By JOS. B. WHITEHEAD, M.D., of Norfolk, Virginia.

IN the *Lancet* (December 11, 1869, page 800), Dr. Peter Eade, of the Norfolk and Norwich Hospital, relates a case of cervical carbuncle successfully treated by carbolic oil. "The patient was 74 years old, and a man remarkably hale, stout, and robust for his age, free from other bodily disease." As the patient, whose case I am about to relate, is eight years older, of feeble health, and had cutaneous erysipelas, I have deemed it not unworthy of notice.

Miss J. C. A., a lady aged 82, having suffered with cutaneous erysipelas of the face, head, right ear, and left arm, for about three weeks, was finally induced to send for me, March 15th, to examine what she supposed to be a large and painful boil. I found her much prostrated, and suffering very great pain. The erysipelatous inflammation had not disappeared, but was subsiding. What she supposed to be a boil was a carbuncle five inches in diameter, situated to the left of the lower cervical vertebræ, and well characterized by the usual induration, by its dusky red inflamed integument, and broad flat surface, with five or six honey-comb openings in the centre. I at once decided upon crucial incisions to relieve the extreme tension and accompanying pain, but on making the first cut, about half an inch in length, she became so much prostrated that I desisted and ordered whiskey as a stimulant. Applied flaxseed-meal and laudanum poultice, and directed that she should take tinct. ferri chloridi et potassæ chlorat. every three hours, and tinct. cinchonæ comp. before breakfast and dinner, and liquid nourishing food.

*16th and 17th.* Patient positively refused to have anything done to the carbuncle, except to allow the poultice to be applied, which I had changed to yeast thickened with bread crumbs.

*18th.* The area of inflammation is extending upwards, and a large slough threatened. As she refused to have it incised, I persuaded her to allow me to treat it by pressure with strips of adhesive plaster applied concentrically, as recommended by Dr. John Ashhurst, Jr., in Erichsen's Surgery. Before completing this procedure, however, she consented to have it incised, remarking that she would rather be cut than strapped so tightly. Having stimulated her with whiskey, I made a deep crucial incision into it, about an inch in length, and applied the poultice. Ordered her medicine to be continued and porter *ad libitum.*

*20th.* General condition improved; states that she had suffered no pain since the night after the incision was made. In the centre of the carbuncle, there was a hole about half an inch deep, and about three-quarters of an inch in its long diameter, which contained dirty pus. Its edges were covered with slough, and stringy connective tissue, and for at least half an inch all around there was slough beneath the integument. I cauterized the edges and also beneath the integument, freely with the solid nitrate of silver, and would have stuffed the hole with lint saturated in pure carbolic acid (as recommended by Dr. J. C. Nott, of New York, see *American Journal of the Medical Sciences,* page 596, April, 1871); but she resisted so stoutly that

I simply syringed it with a solution of carbolic acid, gr. x, and water ℥j, and applied ceratum resinæ comp., which was suggested to me by the encomiums bestowed upon turpentine as a local application in gangrenous sores and carbuncles by Drs. Bartholow and Thielman, as stated in Stillé's Therapeutics.

22*d*. Area of inflammation diminished; its surface but slightly raised, and about one-eighth of an inch from the central aperture (which had enlarged slightly) a healthy line of demarcation is established. The erysipelas has disappeared, and she is able to walk about her room, and is gaining strength. Continued the same local treatment, but substituted as a tonic, tinct. cinchonæ comp. with acid. sulph. aromat.

23*d*. Sloughy connective tissue has not separated; repeated injection and left lint saturated in the acid, in the hole.

24*th*. Used the injection and applied lint as before, but now applied an ointment of carbolic acid gr. xvj, benzoated lard ℥j, and continued its use.

26*th*. A most remarkable change has taken place in two days—the whole wound (which is now about the size and shape of a small almond) is covered with healthy granulations, its edges I have drawn together with a narrow strip of adhesive plaster, and it will heal in a very short time, leaving a cicatrix, which a much younger lady would give herself but little trouble to hide, even in arraying herself in ball costume.

In reviewing this case, I am decidedly of opinion, that the deep crucial incision was of the greatest benefit, and was required, notwithstanding her extreme old age. The ceratum resinæ comp. was of some benefit, but did not check the sloughing.

As regards the use of alcohol, I am satisfied that my patient would have died had she not been stimulated freely with ardent spirits, wine, or malt liquor.

To the incisions and carbolic acid I attribute the cure of the carbuncle, and when an opportunity presents itself, I shall try Dr. Nott's plan of using pure carbolic acid.

No. 156 Main Street, March, 1872.

---

## Art. IX.—*Accidental Irideremia, or Complete Removal of the Iris by the Finger-nail of an Antagonist.* By Julian J. Chisolm, M.D., Professor of Operative Surgery in University of Maryland; Surgeon in Charge of the Baltimore Eye and Ear Institute.

J. M., aged 37, presented himself for treatment at the Baltimore Eye and Ear Institute, suffering from chronic inflammation of the left cornea, with partial loss of transparency. My attention was attracted by the striking contrast which his two eyes exhibited. The left eye, for which he desired treatment, was of a bright blue colour, whilst the entire corneal portion of the right eye was black in colour, with the exception of a white triangular scar $1\frac{1}{2}$ lines wide at its base, which rested upon the lower edge of the cornea with apex extending vertically a little beyond the pupillary region.

To a casual observer, the right eye presented the appearance of an old and severe injury with anterior chamber filled with blood blackened by long exposure; or of an eye under the fullest effects of strong atropia instillation, except that there was no iritic ring bordering the enlarged pupil. Supposing that the eye was useless, what was my surprise, in throwing the light from an ophthalmoscopic mirror upon this black eye, to find it brighten with the true red reflex of a healthy choroidal fundus. The further use of the objective lens indicated transparent media and a normal disk. Upon inquiry, this black unpromising eye proved to be his good one, whilst the normally blue one had its usefulness much marred by the haziness of the cornea.

The patient furnished the following history of himself. Formerly his eyes were both blue and strong, until three years since, when he came out of a fight with one eye black as it appears at present. During the fight his antagonist had gouged him in the right eye. Under excitement he suffered no pain, and was not aware at the time that his eye had been injured. The next day he discovered the change of colour of his eye, and detected a shred of membrane protruding from a scratch in the front of the eyeball. After one or two days this fragment, which was hanging out, came away, leaving a white scar over the sight. No severe inflammation followed upon the injury, and so little inconvenience was experienced that he did not think it necessary to seek professional advice, nor did he lose a day's work. Cold water-dressing was the domestic remedy applied. Until the left eye became inflamed one month since, both eyes had been in constant use, and were believed to be equally good.

A careful ophthalmoscopic examination revealed no trace of iris. When the thrust of the finger had driven the nail through the cornea, it had in some inexplicable manner entered the pupilary opening, and passing between the capsule of the lens and the iris, had thrust this latter membrane against the inner face of the cornea. Acting then as a hook the finger-nail had drawn the iris out of the corneal wound, detaching it from the ciliary ligament, the edge of adhesion being weaker than the cohesion of iritic substance. The final escape of the protruding iris had been effected by the continued drawing action of the ever-winking lids. The finger-nail had in no way injured the lens, nor the accommodation of the eye. Although the corneal cicatrix contained between two descending radii involved about one-tenth the surface of the cornea, light could freely pass around this obstruction and make a perfect image upon the central axis of the retinal chamber. The eye was myopic. I had no means of knowing whether it had not always been so. With this eye he could read No. 1 Jæger's Test Types at 4 inches, and No. 20 at 8 feet. With the optometer and a ten inch convex lens his range of accommodation for "Brilliant" type was near point three inches, far point five and a half inches.

Among the many miraculous escapes from accident, this very interesting case stands alone, and it is nearly impossible to conceive how it can repeat itself.

## Art. X.—*Cases of Ovariotomy.* By Washington L. Atlee, M.D., of Philadelphia. (Reported by J. Ewing Mears, M.D., of Phila.)

Case 232. *Multilocular Ovarian Tumour; Extensive Parietal, Omental, and Vesical Adhesions; Incision six Inches in Length; Recovery.*—November 22, 1870, Miss J. M., of New Alexandria, Westmoreland County, Pennsylvania, consulted Dr. Atlee by the advice of her physician, Dr. John Semple. She was 25 years old, and first menstruated at the age of fifteen. For the first few years the menses were irregular, occurring at intervals of two and three months. They were painful. Afterwards they became more regular, and continued so until September, 1869, when they recurred every other week, gradually diminishing in quantity, until February, 1870, after which they were entirely suspended. There had been no difficulty in urination, and the bowels were regular.

In March, 1868, she received a very severe injury which confined her to bed for a week with very severe pain in the right side and back. This was followed by intense pain in the right side for a week before each menstrual period, causing her to go to bed.

About March, 1869, she noticed a swelling at the umbilicus and a tumour to the left of it. She consulted Dr. Semple, who tapped her six times from the 7th of June, 1870, to the 9th of November, 1870, removing a bucketful of fluid each time. The fluids were transparent, the first of a dark-green colour, the last straw-coloured. Tapping did not greatly diminish the size of the abdomen. Her former weight was 170 pounds.

Emaciation was marked; the abdomen much larger than a woman's at full period of gestation; symmetrical in shape. Fluctuation indistinct and localized—the mass evidently consisting of many cysts. Pelvis free, uterus central, and the os and cervix small. The sound would not enter. The body of the uterus was not clearly defined, but seemed to be movable.

November 26, 1870, the tumour was removed in the presence of Drs. Burpee, Drysdale, Mears of Philadelphia, and others.

An incision six inches in length was made, opening the abdominal cavity. The extensive parietal, omental, and vesical adhesions were separated by the fingers, the tumour lifted out of the cavity, and the clamp applied to the pedicle, which was thin, about five inches long, and twisted.

The tumour was multilocular, and consisted of the right ovary. The weight, including contents, between 60 and 70 pounds. The left ovary and uterus were healthy.

Patient recovered well, and is now in the enjoyment of perfect health.

Case 233. *Multilocular Ovarian Tumour; no Adhesions; Incision four inches in length; a pervious Urachus existing in the Abdominal Wall; Recovery.*—June 8, 1870, Miss A. H., of Altoona, Pa., consulted Dr. Atlee. She was 17 years old, first menstruated at the age of 12, and continued to be regular until March, 1869, when she took cold, and became irregular afterward. The enlargement of the abdomen commenced with the irregularity of the menses, but was accompanied by pain, and developed itself in a general swelling of the abdomen. Latterly she suffered some uneasiness in the right inguinal region. She was considerably emaciated. The abdomen was as large as a woman's at full period of pregnancy, and symmetrical in shape. There was dulness on percussion everywhere, except in the left lumbar region; pelvis free; uterus central; the sound entered 2½ inches. All the characteristic signs of a multilocular ovarian tumour were present. The patient's general health much the same, but the emaciation had progressed, and the abdomen had increased in size.

*Diagnosis.*—Multilocular tumour of the right ovary.

March 8, 1871, Dr. Atlee removed the tumour. Drs. Fay, Gemmill, senior and junior, of Altoona, King and Benham, of Pittsburg, and others, were present. An incision, three inches long, was made in the linea alba midway between the umbilicus and pubes, and the tumour, which was free from adhesions, was readily removed.

It was multilocular, and consisted of the right ovary, had a very thick cyst-wall, and weighed 25 pounds. The patient recovered.

*Remarks by Dr. Atlee.*—In this case I found *before* penetrating the peritoneum, and immediately on dividing the muscular wall, a small cyst which contained about an ounce of yellowish fluid. Six days after the operation, when the use of the catheter was omitted, the dressings became saturated with a thin fluid, which exuded from the wound between the sutures. This was found to be urine. On employing the catheter again this discharge ceased, and the wound finally healed. Now, as the bladder occupied its normal position in the pelvis, whence came this urine? The only answer that I can give is that, considering the extra-peritoneal and elevated locality of this urinary cyst, it was a purse in a dilated urachus, which, although closed at the umbilicus, had from within maintained a communication with the bladder.

CASE 234. *Multilocular Ovarian Tumor; no Adhesions; Incision three inches long; Recovery.*—March 22, 1871, Mrs. A. H. G., of Winchester, Va., consulted Dr. Atlee. She was sixty-one years old; first menstruated at the age of fifteen, always regular, and married in her twentieth year. She had ten children and several "false conceptions." The youngest child was born in the forty-fifth year of her age. Her parturitions were easy and recoveries good; lactation free; nursed her children eighteen months, and did not menstruate while nursing. At the age of forty-eight the menses ceased. She always enjoyed good health.

About three years ago she was seized with severe pain in the right inguinal region and right hip, and one year afterwards her friends first noticed an enlargement over the whole lower portion of the abdomen. She had a similar attack of pain, lasting two hours, in February, 1871.

Abdomen as large as that of a woman's at the full period of pregnancy; pretty uniform in shape; relaxed, and had not the usual tension of ovarian dropsy. It was elastic, free from nodules and ridges, and had the most resistance in the left side. The percussion sound was resonant in the epigastric, right hypochondriac, and right lumbar regions. General fluctuation obscure; local fluctuation distinct; indicating two large cysts. On contracting the abdominal muscles, an oval protrusion in the umbilical region was noticed. The pelvis was free, the uterus was central and movable, and the sound entered two and a half inches.

*Diagnosis.*—The physical signs indicate a tumour of the *left* ovary, but the history of the case points to the *right* ovary.

*March* 27, 1871, Dr. Atlee operated, assisted by Drs. Burpee, Drysdale, Mears, and others.

The tumour consisted of the *right* ovary, was formed of two large cysts, with a small multilocular mass attached to the septum. It weighed twenty pounds. Patient made a rapid recovery.

CASE 235. *Multilocular Ovarian Tumour; Extensive Adhesions; Incision eight inches in length; Weight of Tumour one hundred and twenty-eight pounds; Death on the fourth day.*—May 27, 1871, while at Waterloo, Iowa, Dr. Atlee's attention was called by Dr. A. Middleditch to Mrs. J. S., thirty-nine years old. Menstruation commenced at an early age; married at nineteen, had nine children, the youngest then being four years old. She suffered a good deal in her last gestation and parturition. She first noticed a tumour in the left side. It was quite movable, rolling from side to side. Its growth has been mainly during the last two years. Dr. M. has had her under his professional care, and has attended her through several attacks of peritonitis.

The abdomen was enormously enlarged, measuring round the waist 36 inches, round the umbilicus 62 inches, from sternum to umbilicus 18½ inches, from sternum to pubes 40 inches, and between the superior spinous processes of the ilia 42 inches. When supported in a chair, the abdomen projected to her knees, fell down between the thighs, and rested on the chair below. The lower portion very œdematous. The only resonant points on percussion were in the left border of the chest. Fluctuation distinct in the upper part of the abdomen; lower extremities very œdematous. Emaciation extreme. Pulse 108–12, very feeble.

Uterus elevated; os behind the symphysis pubis, and the sound entered three and a half inches. The pelvis filled by an elastic mass; vagina inverted and somewhat protruding.

*Diagnosis.*—Multilocular ovarian tumour.

*Prognosis.*—Unfavourable.

*May* 28. Ovariotomy was performed, the following gentlemen being present and assisting: Drs. Middleditch, Barber, Lichty, Knox, Eddy, D. F. Crouse, and D. W. Crouse.

After removal of the tumour the abdominal wall was in such great excess that it hung down to the middle of the thighs, and had to be supported on a small pillow. The whole of the wound was below the pubes, and the clamp lay in its upper part, the sutures being below instead of above the clamp.

The tumour was the right ovary, and consisted of one large cyst and a large multilocular mass. Its weight, as reported by the physicians present, who weighed it, with the contents, was 128 pounds. The patient died of exhaustion on the fourth day.

*Remarks by Dr. Atlee.*—The foregoing case belongs to the second class, when death is impending, and in which an operation offers the only chance of life, while at the same time it lessens suffering, scarcely abbreviating the duration of existence, and may prolong it, even though it cannot save it.

CASE 236. *Multilocular Ovarian Tumour; Extensive Adhesions; Tapped fourteen times; Incision six inches in length; Weight of Tumour ninety pounds; Death on the fourth day.*—June 1, 1871, Dr. Atlee visited Mrs. M. W. at Oakland, near Pittsburg, a widow, forty-seven years old; married before the commencement of menstruation, which occurred at the age of seventeen, and was always regular. She had four children, the youngest being twenty years old. Parturitions were not accompanied by unusual difficulties; lactation free; nursed her children two years, and the menses recurred one year after child-birth. After her first parturition she had an attack of phlegmasia dolens in the left leg, which continued to be affected, more or less, ever after. Menses regular until the summer of 1869, and continued to return every two or three weeks, lasting eight or ten days, until June, 1870, after which they entirely ceased.

Tumour first noticed July, 1868, and, as she thinks, in the right side. It had a flat or compressed form, and was quite movable, falling from side to side. It has gradually increased ever since. She was first tapped by Dr. Gilmore, November 7, 1869, removing two bucketfuls of fluid resembling soft soap. It was stringy, and by heat coagulated like the white of egg. Afterwards she was tapped thirteen times, the last time on the 20th of May last. There is a sense of obstruction in urination and defecation. Emaciation is very great.

Abdomen of the patient very large, although tapped so recently; tolerably tense and elastic, particularly in the superior portions. Resonant on percussion only in the left hypochondrium. Fluctuation is distinct throughout the upper part of the abdomen, and indistinct below. Here and there nodules can be detected, particularly in the left side. The lower part of the abdominal wall, and the lower extremities are very œdematous. The uterus is elevated and immovable. The sound enters 2½ inches, with difficulty.

*Diagnosis.*—Multilocular ovarian tumour.

*Prognosis.*—Unfavourable.

June 2, Dr. Atlee operated, assisted by Drs. Gilmore, Pollock, King, and others.

The tumour was multilocular, consisting of one large cyst, and a large multilocular mass. It was the right ovary, and weighed ninety pounds.

The patient died on the morning of June 5th. Twelve hours after, a post-mortem examination was made, of which Dr. W. L. Foster writes: "Abdomen distended with gas; wound in good condition, externally healed down to the pedicle; peritoneal surface firmly agglutinated; no hemorrhage except a little oozing from posterior surface of womb; ligatures all intact; deposits of lymph over peritoneal surface wherever injured. Left ovary in place, modified, having a pancreatic appearance. Right kidney enlarged and softened; left in healthy condition; liver small."

*Remarks by Dr. Atlee.*—The above case also properly belongs to the 2d class. The immense size of the tumour, the exhausting tappings, the numerous vascular adhesions, and the emaciation, properly place it in this position.

## ART. XI.—*Case of Congenital Retinitis Pigmentosa.* By GEO. C. HARLAN, M.D., Surgeon to Wills Ophthalmic Hospital.

A. C., an intelligent girl, 18 years of age, had very imperfect vision. She stated that she had never seen better, indeed that her vision had improved since childhood There had never been any pain or other sign of inflammation in either eye. She was sent for examination because her friends noticed that she often retired to some distance to look at an object, and were in hopes that glasses might be found to improve her near vision. She herself insisted, however, that she saw better near at hand when she had once found out just where to look for an object, but that it was often necessary to step back for some feet before she could fix it. A single flower on a bush, for instance, was seen much more distinctly when quite close to the eyes, but she was sometimes unable to see it at all until she had first taken a more distant view of it, and then walked towards it.

She could distinguish No. cc of Snellen's type at twenty feet, though not very readily, and could read No. 7, with difficulty, at one foot. Convex glasses made no improvement. Vision was better in a very bright light, as sunlight falling directly on a page of large print; and she experienced difficulty in going about after sundown. In other words, she had decided hemeralopia. There was quite a high degree of nystagmus.

On testing the field of vision, it was found very much contracted, which at once explained the apparent anomaly in her symptoms. A small object completely occupied the sensitive part of the retina, and could be seen only when its image fell exactly on the macula lutea. At a distance, the apparent size of objects being less, a greater number of them were included in the field.

Ophthalmoscopic examination showed the characteristic appearances of "retinitis pigmentosa," or, perhaps, more correctly, "pigmentary degeneration of the retina," very well marked.

There was no consanguinity between her parents, no history of hereditary blindness, and no indication of hereditary syphilis.

As neither the refraction nor accommodation was at fault, of course no form of spectacles could be of use, but as the retina, even in its contracted field, was incompletely sensitive, the patient was directed to procure a large convex hand-glass to magnify the letters of ordinary print to a size that would enable the eye to distinguish them.

An interesting point in the case is that, contrary to the usual course of the disease, which is a gradual but constant contraction of the field of vision, tending ultimately to complete blindness, the patient positively asserted that there had been a decided improvement in her vision.

---

## ART. XII.—*Anatomical Anomalies.* By T. HALE STREETS, M.D., Assistant Surgeon U. S. N.

MOST of the following anomalies were observed in the dissecting-room of the Philadelphia School of Anatomy, during the session of 1871–72. They were collected at the instance of Dr. W. W. Keen, and are published with his consent.

*Osseous.*—A female subject which presented two supernumerary ribs in the cervical region. They articulated with the seventh vertebra, one on each side. It is to be regretted that the parts in this region were destroyed before their relations could be noted by a competent observer. Dr. Keen has the specimen and will describe it more fully.

*Muscular.*—A subject in which a muscular slip arose from the fascia which binds down the flexor sublimis digitorum, about two inches above the pisiform bone. Its origin was about half an inch in breadth. The fibres converged as they passed downward, and terminated in a long, narrow tendon, which joined the abductor minimi digiti, at its origin, at a very obtuse angle. The tendon then ran down along the outer border of the abductor and gave attachment to some of its fibres. It was inserted into the same point on the base of the first phalanx of the little finger as the abductor minimi digiti, and in action antagonized, in a measure, this muscle. It also assisted in flexing the little finger.

A case in which the tendon of the flexor profundus digitorum did not pierce the tendon of the flexor sublimis digitorum on the little finger, but passed to the radial side of it. This was observed on the little finger of both hands.

*Arterial.*—A subject in which the ascending pharyngeal was given off from the inner side of the occipital.

In the same subject which was mentioned above as presenting two supernumerary cervical ribs, the vertebral artery of the right side was small and entered the vertebral foramen of the fifth cervical vertebra; while that of the left side entered the foramen of the fourth cervical vertebra.

A subject in which an axis existed on the brachial at the lower part of the upper third of the arm, which gave off the superior profunda, the nutrient, and the inferior profunda arteries. In another case the brachial gave off the inferior profunda somewhat lower down than usual. It was as large as the brachial below the point of its origin. It ran down in the triangular space formed by the pronator radii teres and supinator longus, and then passed beneath the flexors in company with the median nerve, and gave off the interosseous. The brachial, much reduced in size, bifurcated at the bend of the elbow into the ulnar and radial, which were quite small. The former passed over and lay superficially to the flexor muscles. It crossed the pronator radii teres at its upper third, the flexor carpi radialis at its middle, and then ran parallel with the tendon of the flexor sublimis digitorum to the palm of the hand.

A subject in which the brachial of the right side gave off, from its anterior surface, about one inch above the point of its usual bifurcation into the ulnar and radial, a small branch which passed down the middle of the forearm on the outer side of the flexor carpi radialis. It crossed the tendon of this muscle and terminated on the tendon of the flexor sublimis digitorum just before it passed under the annular ligament. In another subject the same anomaly was observed. In this case the median branch ran down in company with the median nerve, and was distributed to the palm of the hand. In two cases the brachial artery was observed to bifurcate along the humerus; once at its upper third, and once at its middle.

A case in which the radial gave off the superficiales volæ, on the right side, two inches above the lower end of the radius, and, on the left side, three inches from the same point. In both instances it was as large as the continuation of the radial.

A subject in which the hepatic artery gave off a branch to the œsophagus. The branches from the gastric were very small. In the same subject the gastro-epiploica dextra came off as a separate branch from the superior mesenteric, and the colica media and colica sinistra were given off by a common trunk from the inferior mesenteric.

A subject in which an accessory pudic artery was given off from the obturator of the right side. After passing forward for about one inch, it divided into two branches, one of which formed the artery of the corpus cavernosum, and the other the dorsal artery of the penis. No middle hemorrhoidal was given off from the anterior trunk of the internal iliac. The sciatic was large, and divided into two branches; the anterior of which supplied the place of the middle hemorrhoidal. On the left side the obturator was given off from the deep epigastric.

A subject in which an abnormal artery was given off from the femoral. On the left side it arose about midway between the superficial circumflex ilii and profunda femoris. On the right side an artery analogous in function arose from the profunda femoris just below the origin of the external circumflex. Both of these arteries came off from the external surface of their parent trunks, and afterwards divided into three branches, which supplied the vastus externus, the rectus femoris, and cruræus. The same anomalous artery was observed in another subject on both sides. In this instance they both arose from the profunda about half an inch below its origin.

A case in which the anterior tibial was wanting.

*Nervous.*—Four cases were noted in which the musculo-cutaneous nerve gave off a communicating branch to the median in some part of its course. In one instance it gave a large communicating branch just before it pierced the coraco-brachialis muscle. In two instances it gave off a smaller branch at the lower third of the arm. Here the communicating branch crossed the brachial artery. In the fourth case the communication took place at the upper third of the arm.

A subject in which the nerve of Wrisberg was given off as a branch of the internal cutaneous.

---

## ART. XIII.—*A Peritoneal Inflammatory Cyst resembling an Ovarian Tumour; Exploratory Operation; Incision Five or Six Inches long; Death on the Third Day.* By WASHINGTON L. ATLEE, M.D., of Philadelphia.

APRIL 25, 1871, I visited at Platte City, Missouri, Mrs. G. W. B., at the request of Dr. J. T. Wilson, of Weston, Mo.

The physician of the patient, Dr. Johnson, informed me that at the time of parturition, five months before, he felt a tumour on the right side of the uterus, and perfectly movable and elastic as if it contained fluid. After the birth of the child—even through the fat walls of the abdomen—he could press his hand edgewise between the tumour and the uterus, and move them readily on each other. Some days after childbirth she was seized with rigor, followed by fever and supposed peritonitis, and a rapid development of the tumour, with great constitutional disturbance and emaciation.

At the time of my visit the patient was larger than a woman at full period. The shape was pretty uniform, the abdomen elastic and readily fluctuating in all directions. The percussion sound was resonant over the whole left side, and dull elsewhere. The pelvis was filled with an elastic tumour, and the uterus was elevated above the brim of the pelvis entirely beyond reach. Externally its body could be traced near the umbilicus to the left of the median line, and about one and a half inch from it.

Notwithstanding the case was very unfavourable for operation, in consequence of the acuteness of the original attack, the rapidity of development, the pelvic complication, the displacement of the uterus, and the general condition of the patient, I agreed to make an operation of exploration, believing at the time that the tumour was ovarian.

The following gentlemen were present, and assisted in the operation: Drs. Johnson and Beaumont, of Platte City; Bonifant, Wilson, and Shortbridge, of Weston; Robinson, of Ridgely, and Coffey, of Camden Point. I made an incision in the linea alba and carefully opened the peritoneal cavity, so that I could examine the interior. The uterus was found to occupy the position above stated, its fundus being above the umbilicus. The broad ligament of the right side was stretched obliquely upward across the whole body of the tumour, in front of it and grasping it like the open hand. The left broad ligament was stretched in like manner obliquely downward, but to a smaller extent, across the left side of the tumour. The fundus of the uterus, and the upper edges of the two broad ligaments, formed a distinct ridge, extending across the tumour obliquely from the left inguinal region to the right hypochondrium. In the upper border of the right broad ligament was a healthy elongated ovary, with a cyst as large as a hazel-nut in its distal extremity, and in the corresponding part of the left broad ligament was the elongated healthy left ovary. The pelvic peritoneum was raised out of the pelvis by the tumour so as to form a cul-de-sac of reflected membrane about midway between the umbilicus and pubes, extending across the whole front of the abdominal cavity. I now extended the incision to the distance of five or six inches, and passed my hand into the cavity of the abdomen, in order to ascertain more clearly the relations of the tumour. Satisfied that the tumour was not ovarian, and that it involved in its walls all the viscera of the lower part of the abdomen and of the pelvis, I abandoned the idea of its extirpation. It being cystic, however, I passed a large trocar into it above the left broad ligament, near the uterus, and drew off fifteen pints of greenish pus and numerous large, stringy clots of fibrinous matter. The small cyst in the right ovary was also punctured, and a thin, transparent fluid escaped. A tent was now placed into the cyst and carried out of the lower edge of the wound, and the latter closed with five or six sutures. The patient died on the third day.

*Remarks.*—The foregoing case was one of very peculiar interest. Before the operation I diagnosticated the tumour to be ovarian. Afterward I supposed that the original tumour was a pedunculated uterine fibroid tumour, that inflammation had supervened, and that an abscess had formed within it, which had caused it to partake of the characteristic signs of a unilocular ovarian cyst. Subsequent experience, however, satisfied me that this last opinion was erroneous, and that the tumour originated in the pelvis through inflammation localized in the peritoneum, agglutinating the serous surfaces and forming pockets therein to receive the resulting fluids of this inflammation, forming what I denominate, in my book on the "Diagnosis of Ovarian Tumours," a *peritoneal inflammatory cyst.*

# REVIEWS.

ART. XIV.—*Electro-therapeutics.*

1. *A Treatise on Localized Electrization and its Applications to Pathology and Therapeutics.* By Dr. G. B. DUCHENNE. Translated from the third edition of the original by HERBERT TIBBITS, M.D., Licentiate of the Royal College of Physicians of London; Medical Superintendent of the National Hospital for the Paralyzed and Epileptic. With numerous illustrations and notes and additions by the translator. Philadelphia: Lindsay & Blakiston, 1871.
2. *A Practical Treatise on the Medical and Surgical Uses of Electricity, including Localized and General Electrization.* By GEORGE M. BEARD, A.M, M.D., Fellow of the New York Academy of Medicine, Member of the New York County Medical Society; and A. D. ROCKWELL, A.M., M.D., Fellow of the New York Academy of Medicine, Member of the New York County Medical Society. With one hundred and two illustrations. New York: William Wood & Co., 1871.
3. *Lectures on the Clinical Uses of Electricity, delivered in University College Hospital.* By J. RUSSELL REYNOLDS, M.D., F.R.S., Professor of the Principles and Practice of Medicine in University College, Examiner in Medicine to the University of London, Physician to University College Hospital. London: J. & A. Churchill, 1871.
4. *Galvano-therapeutics. The Physiological and Therapeutical Action of the Galvanic Current upon the Acoustic, Optic, Sympathetic, and Pneumogastric Nerves.* By WILLIAM B. NEFTEL, M.D., New York: D. Appleton & Co., 1871.
5. *Electricity in its Relations to Practical Medicine.* By Dr. MORITZ MEYER, Royal Counsellor of Health, etc. Second revised and corrected American edition. Translated from the third German edition, with notes and additions, by WILLIAM A. HAMMOND, M.D., Prof. of Diseases of the Mind and Nervous System, etc, in Bellevue Hospital Medical College, etc. New York: D. Appleton & Co., 1872.

THE list of works on electro-therapeutics is steadily lengthening. This fact indicates the increasing attention which is being devoted to the subject, and gives hope for further solution of the mysteries which are still bound up in the subtle science of electricity. It cannot but be expected that there should be considerable repetition in medical books which appear almost at the same time upon the same subject; but light is, nevertheless, thrown upon it, for it is regarded by different writers from different points of view. One looks mainly at the scientific side, the other at the practical, and thus the science and art are simultaneously developed and new thoughts suggested. As physicians, also, we cordially welcome all efforts which result in wresting healing agents from the hands of ignorant or unprincipled men. No doubt there is still something of empiricism in the use of electricity by even those who have laboured earnestly and honestly to find out the indications for its employment. There is much about this agent which is still unknown, and consequently it is not always an easy matter to decide as to its application. Yet this is true of nearly all, if not all, of our remedies, but it does not deter us from using them with a good degree of confidence. Besides, a physician, who in a spirit of humanity and scientific zeal, is working for the relief of suffering and advancement of knowledge, is almost certain to advance the science of medicine, while the charlatan labours for gain, and science is held of little account. This question as to the uncertainty of electro-therapeutics is thus referred to in one of the works now under consideration, in a chapter from which is taken the following extract:—

> "The truth is, that among the advanced minds of our day the conviction is ever deepening and strengthening that therapeutics is not yet, and may never be, an exact science; that the time may indeed never come when it shall be possible to treat any disease by the rule of three. So profound is our ignorace of the chemical constitution of the body; of the molecular and other changes that incessantly take place in health and disease; of the modifications which these changes undergo by the infinite and varying influences of climate, temperament, diet, and mode of life; and so limited and uncertain is our knowledge of the nature and action of medicine, that we may well resign the hope of reducing therapeutics to an exact science, to distant generations. The number of those in the profession who will subscribe to the emphatic words of Niemeyer, 'It is idle to hope for a time when a medical prescription should be a simple resultant of a computation of known quantities,' is rather increasing than diminishing with the advance of science, and the belief is extending that therapeutics is mainly a matter of empiricism; that while we are waiting and toiling to perfect our knowledge of pathology and determine its relation to therapeutics, we must not allow our patients to suffer, but should faithfully use those remedies and systems of treatment that experience has recommended.
>
> "Such has been the practice of many of our most successful experimenters with electrization."—*Beard and Rockwell*, p. 115.

Our own conviction is, that, while there is much empiricism in the application of remedies, the case is not so bad as would be inferred from the foregoing quotation. Given a fair knowledge of remedies, the results will be almost directly in proportion to correctness of diagnosis. It is, however, at present pretty generally conceded by physicians that electricity is a valuable remedy. This concession is comparatively recent, and many would still dwell quite as readily upon its uncertain action as upon its brilliant cures. But admitting it to be a remedy of acknowledged value, it is then a question as to the kind which shall be used and the method of application. Duchenne regards the faradic current as *par excellence* the one adapted for medical purposes; others prefer galvanism, but the best opinions regard both as useful, each to be employed with a fair degree of precision for the fulfilment of certain indications. There is a difference of opinion as to the utility of franklinic electricity. Duchenne, who may be called a *partisan* of faradism, says:—

> "It appears then, on the whole, that the excitation of muscle by static electricity ought generally to be excluded from practice, and the more so since it may be replaced by another electric agent, which will be described in the third section (induced electricity); and which excites muscular contractility and sensibility in a more energetic and effectual manner than the former, without

any of the inconveniences that I have described. I purpose to point out in the sequel the cases in which its employment will be useful or necessary."

"It is, however, incontestable that static electricity, which for many years was used exclusively in medical practice, has wrought some cures seemingly marvellous. These results show only that certain paralyses are always cured by electricity, in whatever form and manner it may be employed. Unfortunately, these cases have been so rare that this mode of using electricity has not borne the test of time, and has been many times laid aside by physicians after having been taken up with some degree of enthusiasm." Further on, however, at page 44, he says: "In my hands static electricity has been of great utility in certain cases in which the other varieties have been insufficient." (pp. 8–9.)

Dr. Tibbits, who has translated Duchenne's works, and who is medical superintendent of the National Hospital for the Paralyzed and Epileptic, states that franklinic electricity has been found of considerable value in that institution, as well as in private cases occurring under his own observation. Facial neuralgia, facial spasm, hysterical aphonia, hysterical hyperæsthesia, and general or local tremor are the diseases especially mentioned as having been benefited by insulation, or drawing sparks from the affected regions.

Dr. Russell Reynolds also speaks unreservedly in favour of its use in certain cases, but Drs. Beard and Rockwell are faint in their praises, while admitting that Professor Schwanda, of Vienna, has reported favourable results obtained by means of Holtz's electrophorous machine. It seems to be admitted then that franklinic electricity is valuable as a therapeutic agent; it is not yet decided whether it is superseded in all cases by faradism or galvanism.

Passing to the consideration of faradism we are in the presence of an agent which has been in use for many years, has achieved unexpected success, has often been the cause of disappointment, but has slowly gained ground, and with improved methods for appliance will probably take a permanent position in therapeutics. But what do we know of faradism? Those who have used it to any extent would pretty generally agree that its effects are mainly, what for want of a knowledge of essential properties, we term stimulant and alterative. By its aid nervous and muscular vitality are increased, and pain is sometimes relieved. Duchenne also considers that the current which proceeds from the first coil of wire, or that which immediately surrounds the soft iron needles, excites more acutely the nerves, muscles (proportionately increasing their contractility), rectum, bladder, testes, epididymis, and spermatic cord, and that the current of the second coil acts more powerfully upon the cutaneous sensibility, the sensibility of the retina, and penetrates most deeply into the tissues. He also believes that the therapeutic action of localized faradization, to which method of application he was such a devoted adherent, depended upon the promotion of general circulation which resulted from its use, and probably also from the excitation of the *trophic* nerves which govern nutrition. He seemed to be of opinion that faradism could produce all of which galvanism was capable with the exception of catalysis, but this is not the general opinion. As has been previously observed, the faradic current is more generally regarded as a nervous and muscular stimulant when mildly administered, but capable of producing directly opposite effects when very strong or protracted. It differs from galvanism, as a rule, in the absence of the production of those central and chemical phenomena which are characteristic of the battery current.

Making this distinction, we must now consider the galvanic and faradic current together, since it is a question whether the difference is not, to use a medical term, functional, rather than essential or organic. Duchenne thought that localized muscular galvanization by interrupted currents, applied with a battery of sufficient electro-motor power, produced a therapeutic action almost identical with localized muscular faradization. He also explained as follows those cases in which muscles will not respond to the faradic current, but are affected by galvanism:—

> "The muscles which in certain forms of paralysis no longer contract under the influence of localized faradization, may sometimes still be thrown into contraction by the intermissions of a voltaic current, when these muscles or their nerves have been traversed, for one or two minutes, by a continuous current.
>
> "This phenomenon, which for the first time was described by Remak, in pathological conditions, had been previously experimentally discovered in animals, by R. Heidenhain, who observed that on submitting a muscle to the shocks of induction, or on tearing it by stretching, or on plunging it into hot water (28° to 30° Cent.), it lost its excitability; and that this property (the faculty of contracting under the influence of electric excitation) was restored to it by the continuous current of a Daniell's battery of 25 or 30 elements, in a manner more evident in employing the ascending than the descending current.
>
> "I have tried a very large number of times to produce this electro-muscular phenomenon, in traumatic paralysis of nerves, in saturnine paralysis, and in the spinal paralysis of infancy, but I have only seldom succeeded.
>
> "I should here point out the following source of error. When the contractility is considerably weakened, a time comes when the muscle no longer contracts under the influence of the rapid intermission of induction currents, while it still responds, in a very appreciable manner, to the more distant intermissions (from one to two seconds) of the same induction current. But, a great number of induction instruments giving none but rapid intermissions, it has happened that on applying them to the investigation of electro-muscular contractility, this has been supposed to be abolished, while it would still have been called forth by the slow intermittences of an induction current and even of a galvanic current. It has been by proceeding in this way, there can be no doubt, that experimentalists have been deceived by appearances, and have been brought to believe in the frequency of the electro-pathological phenomenon now under consideration.
>
> "However this may be, I repeat that I have sometimes found cases of paralysis in which the muscles no longer responded to the distant intermissions of an induced current, but in which they contracted more or less under the influence of the distant intermissions of a strong voltaic current, after having been traversed during from sixty to eighty seconds by a constant continuous current." (pp. 195, 196.)

We may also infer, in the absence of actual proof, that the different varieties of electricity are radically the same, from the fact that the diseases in which they have proved curative are all eminently of a similar character.

With regard to the action produced at the different poles, and the direction of the currents, it seems to be pretty well agreed upon, that although experiments on animals and chemical investigations show that lowered irritability, the dilatation of vessels and the presence of acids are associated with the descending current and the positive pole, and the reverse phenomena with the ascending current and negative pole, yet these distinctions are not to be closely regarded in practical therapeutics. Says Dr. Reynolds:—

> "Supposing I have the positive end of the battery connected with a person's eft hand, and the negative end connected with his right, the current passing from

> the positive to the negative pole, goes up the person's left arm to the trunk of the body, and down the right arm to the machine again. The current passing up the arm has been called the 'inverse,' and that coming down the arm has been called the 'direct.' In the arm in which the current is passing upwards the 'irritability' of the muscle and nerve is gradually increased; in the other arm, in which the current is passing downwards, the irritability is gradually diminished. You may test this fact by now and then breaking and remaking the continuous current, and you will find that in the two arms two different degrees of irritability exist, according to the direction in which the current has been passing, whether up or down. One arm will act more, the other less readily than in health. The difference thus produced between them is sometimes highly marked.
>
> "It may occur to you to ask, 'If that be the case, which current should I use to relieve pain and spasm, the direct or the inverse?' All I have to say is, that, so far as I have seen, it does not make the smallest difference. Theoretically it should make a very great difference, but practically, so far as my observations extend, it makes none. I have seen pain or spasm relieved as well by the current in one direction as in the other, and this whether the spasm has been clonic or tonic, or whether there has been merely tremor." (pp. 9, 10.)

Beard and Rockwell write in a similar manner:—

> "The rule is that the descending current calms, while the ascending irritates; and yet there is no question that both currents may have a calming or an irritating effect, according to the strength of the current used, the length of the application, and the nature and locality of the disease.
>
> "Some operators apply the positive pole over the seat of the pain or inflammation, and others the negative; and both obtain good results. Some use the ascending current, others the descending; and both produce satisfactory muscular contractions. In localized galvanization of the brain, cervical sympathetic, and spinal cord, both directions of the current produce therapeutic results." * * * * "Whether the effect of an application of electricity is of calming or irritating character, depends on the temperament of the patient, the nature and locality of the disease, and the length and strength of the application, as much as, oftentimes even more than, on the position of the poles or the direction of the current." (p. 165.)

Duchenne objects with regard to some of the effects claimed for electricity that they are deduced from experiments on animals, and that the reaction in man is different: perhaps improved and more extensive experience will reconcile some of the apparent discrepancies between theoretical and practical electricity. As scientific men such a reconciliation would certainly be more satisfactory to us. Probably Dr. Neftel's statement that the "galvanic current *alone* exercises a direct action upon the organs of special sense, as well as upon the nervous centres," is rather broader than a physician of the author's attainments would be willing to endorse, since there is evidence that the faradic current will, although in rare instances and less decidedly, affect nervous centres. He also believes, with Remak, that "the general effect of a prolonged application of the galvanic current is soothing, with an increase of temperature and subsequent perspiration, and is almost always followed by a prolonged, refreshing sleep." This sedative effect of galvanism is, we think, pretty generally admitted.

In the preceding paragraphs an effort has been made to present the general views of electricity, medical electricity, on which there is least disagreement among those who have studied the subject carefully, as well as to hint at the indications for the use of the different varieties. Some points will be subsequently referred to in a rapid review of the different works singly, on which there is a decided difference of opinion. Special directions as to the employment of electricity in a given list of diseases have not been offered here, for they would not fall within the province of this article.

In reading Duchenne's work, which Dr. Tibbits has made accessible to all readers of the English language by a smooth and finished translation, we are struck with its scientific character. First comes the statement, and then the proofs by which the claim is believed to be established. Where, as in the inquiry, as to what class of nerves promote nutrition and capillary circulation, he depends more upon hypotheses, it is in the tone of one who apologizes for such support. Thus he says:—

> "It is with fear that I approach this question. In all my earlier researches into the physiology of movement the problems to be solved have always been in harmony with anatomy, with electro-muscular experiments, and with clinical observation. On the contrary, in the new path on which I am now to enter, I cannot make a step without proceeding from hypothesis to hypothesis, relying only upon the great discoveries of experiment."

Such sentiments inspire confidence, yet in those parts of the work which refer to Remak and the continuous current, we observe an adverse prejudice which is not well concealed. In fact, the work is defective in reference to galvanism, and to supply this want Dr. Tibbits has appended a condensed translation of Ziemssen's views upon the subject.

Dr. Duchenne commences his work by a description of the different varieties of electricity, touches upon static or franklinic electricity, gives a short space to galvanism, and passes on to faradism. In the portion on galvanism, he asks:—

> "Is the continuous current really an hyposthenisant of nervous force? If we may apply to mankind the results obtained by vivisection, the reply should be in the affirmative. We know in fact, that a continuous current, passed for a certain time through the nerves or the limbs of an animal, not only diminishes the motor power, but even produces paralysis. I shall show in the sequel by the results of experiments that this kind of hyposthenisant action is not appreciable in man. With regard to the action of the continuous current upon sensation, although after a certain time it produces numbness of the limb through which it passes, I do not believe that it can be considered as an hyposthenisant of the nervous system, or, in other words, as an anæsthetic." (p. 13.)

This is one of those points on which there is a difference of opinion, and we think that a majority of those who have used the continuous current would be disposed to admit its anæsthetic or soothing influence. Our own experience, added to that of others, leads us to this admission, and we believe we have observed a diminution in the pain of malignant disease as a consequence of the application of galvanism. Others have noticed this effect, and in the April number of this Journal for the present year, on page 465, is a report of an interesting case of encephaloid disease for which galvanism was used. The report was communicated by Dr. Althaus.

> "This case is one of very great interest. The effect of the electrolytic treatment, which was not employed until late in the history of the case, was, except upon the first occasion, to afford complete relief from pain, for four or five days after each application, and to slightly diminish the size of the tumour. The intensity of the pain, before the application of electricity, may be inferred from the fact that it had been found necessary to administer hypodermically from twenty to twenty-four grains of morphia in each twenty-four hours. We quite agree with Mr. Tait that electrolysis is worthy of a fair trial in any case of cancer in which operative interference is not deemed advisable."

Duchenne's experiment consisted in passing a current of from thirty to fifty elements through the body of a healthy man who had previously been subjected to the passage of a current from sixty pairs. He thus describes it:—

"It has been shown by numerous experiments upon animals, that the continuous current manifests its special influence upon contractility, or upon sensibility, according to the direction in which it passes longitudinally within the nerve, when the excitability has been previously diminished by the more or less prolonged action of a continuous current.

"To discover the influence of a continuous current upon a healthy man, it was therefore necessary that the excitability of his nerves should be first modified by the continuous current. For this purpose, I employed in the first instance, a trough battery (of Cruikshank and Wollaston) composed of sixty couples, and I caused a continuous current to pass through the nerves for from twenty to thirty minutes, by placing them in the circuit of this battery, and by using the method of procedure indicated above. This attempt having produced no result, I thought that a more powerful and more constant current might diminish the excitability of the human nerves, and I then had recourse to a battery composed of thirty of Bunsen's pairs, a little weakened by previous use. Afterwards I employed a Daniell's battery of from thirty to fifty elements. In all these experiments, I took care to avoid the occurrence of contraction in completion of the circuit, by proceeding in the way formerly described.[1] After twenty or thirty minutes of action of the continuous current from these batteries, in whatever direction, I was unable to discover that the sensibility of the nerves had diminished. The contractions of the muscles supplied by the nerves were quite as energetic, under the influence of an intermittent current, after as before the experiment; the sensibility was not modified, and the power of voluntary movement was not diminished.

"Although I was unable to diminish artificially the excitability of human nerve, I had at least occasion to observe certain instances of paralysis, in which the nerves and even the muscles had in part lost their excitability. In these cases again, the inverse continuous current acted no more upon the contractility than did the direct continuous current upon the sensibility. Neither of these currents abolished the excitability of nerves already affected, and through which they were made to pass for a considerable time.

"To sum up, in a man in normal condition: 1. A continuous current passed through a nerve, during from twenty to thirty minutes, did not appear to me to diminish its excitability; 2. When I directed a continous current, centrifugal or centripetal, upon a nerve of normal excitability, or upon a nerve the excitability of which was diminished by certain forms of paralysis, I observed always the customary phenomena, namely, contractions and sensations; neither the one nor the other of the two (direct and inverse) currents ever acted in an appreciable manner, upon either the sensibility or the contractility separately."[2] (pp. 176, 177.)

What is to be done when in questions of therapeutics the authority of great names is attached to conclusions at variance with our own experience, but to believe that often both the conclusions, although differing, may yet have been true in the cases under consideration. This is frequently observed with reference to the effects of a particular drug in the hands of different physicians.

The illustrations given of the different effects produced by the currents of the first and second coil would seem to confirm his statement that the two currents should not be used indifferently. And it must be noticed by any careful reader of this scientific work that the claims made throughout the volume for the varieties of electricity and methods of application, are the result of close observation and experience.

---

[1] Placing a tube, filled with water, called a moderating tube, in the circuit.

[2] Duchenne's note to the foregoing—"I formulated almost the same conclusions in a memoir presented in 1848 to the Académie des Sciences. But at that time I had not endeavoured, in my experiments, to diminish the irritability of nerves by subjecting them to the influence of a powerful continuous current."

In considering the fundamental principles of his system of localized electrization, he seeks to localize electricity in the skin without influencing deep-seated organs, or, on the other hand, to concentrate its power upon a nerve or muscle and make it penetrate to subjacent tissues. He finds his solution of this problem by the use of dry or moist rheophores, the dry limiting the action to the skin, the moist causing the fluid to penetrate more deeply. This subject is considerably elaborated; then follows a description of different instruments, and it may here be mentioned, that in another part of the work, in speaking of the necessary requirements of an induction apparatus, he considers that it should possess primary and secondary coils, constructed after certain proportions of thickness and length of wire, and adjustments for producing slow or rapid intermissions, as well as for measuring and distributing powerful or feeble currents; these requirements can scarcely be questioned.

Following the description of instruments come directions for the method of practising muscular faradization. When the electric excitation of the muscle is accomplished by passing the current through the nerve distributed to it, the process is termed *indirect muscular faradization;* when an individual muscle, part of a muscle, or fasciculus, is excited by acting directly upon it with the current, it is the method of *direct muscular faradization.* In these operations the rheophores must be brought as near as possible to each other without touching, probably with a view of confining the action to the immediate vicinity of the rheophores, since in another part of the work he says that, if the operator be careful to keep the rheophores together, it is certain that the current is felt but feebly by the nervous centres.

In the midst of the directions now given for the electrization of special organs, Dr. Tibbits has inserted an extensive quotation from Ziemssen on laryngeal electrization, in which that subject is very fully considered, and is worthy of careful reading.

Chapter III. is devoted to historical and critical observations upon the principal methods of electrization, and here are considered: 1. electro-puncture; 2. electrization by reflex action; 3. localized electrization by induction currents and by interrupted galvanic currents; and, 4. continuous constant currents.

After a historical retrospect of the subject of electro-puncture, he expresses the opinion that it is far from the attainment of the end proposed by Sarlandière and Magendie. His objections to it are that it does not exactly localize electricity in those organs intended to be operated upon, that it is insufficient or inapplicable in anæsthesia or lesions of tactile sensibility, and inferior to localized faradization in the treatment of muscular paralysis. He states, however, in a note, that it has been of service in hydrocele; in the resolution of certain ganglionic tumours; in destroying certain hepatic and ovarian cysts, and in forming a coagulum in aneurism.

Premising that, according to the law which governs the conduct of the nervous fluid in the motor nerves, the motor action is in the direction of those nerves which are distributed to muscles, it is stated that

> "Electrization of the nerve-terminations of limbs will never call into contraction muscles which receive their nerve filaments from branches given off above the point excited." (p. 221.)

If, for illustration, two rheophores are held in one hand without coming into contact, the muscles of the forearm do not enter into contraction. On the other hand, if one rheophore is held in the hand and the other placed higher up on the limb, or if one is held in each hand, the contraction of the muscles of the forearm or arm takes place according to the position of the rheophores and intensity of the current. He therefore concludes that

> "In order to produce contractions of muscles situated above the nerve-terminations, it is necessary to separate the rheophores in such a manner that the currents may traverse the limbs, or rather their nerves, in a longitudinal direction; this is *electrization by reflex action.*" (p. 121.)

The electrization by reflex action operates specially upon the sensibility, ascends to the posterior roots of the nerves, affects the anterior roots, and thus produces, in the muscles dependent upon the nerves the terminations of which have been excited, irregular contractions that are but little in harmony with the intensity of the sensations.

This method the author considers applicable to the treatment of some forms of paralysis in which it is proper to stimulate the nervous centres. It is not, however, very warmly recommended, since while some cases have been benefited, others have suffered after the treatment, from deep-seated pains in the course of the nerves, the extremities of which had been stimulated. Serious consequences have also resulted in certain instances. He recommends localized faradization in preference, but even this is not highly praised. He does, on the other hand, recommend the passage of mild induced currents from the mouth to the anus as an effectual remedy in asphyxia, since thus the general reflex action of the cord is most certainly excited. Cutaneous faradization of the precordial region is also recommended in asphyxia, and in atrophic paralysis localized faradization is considered of great value. In support of his views on atrophic paralysis, reference is made to the experiments of our countrymen, S. Weir Mitchell, G. R. Morehouse, and William W. Keen, on "Gunshot Wounds and other Injuries of Nerves."

It would require too much space to give in full, the observations commencing on page 149 with regard to the comparative effects of induced and continuous currents on the sympathetic nerve. In the first place the author objects to the experiments of Onimus and Legros on rabbits, which consisted in laying bare the nerve in the neck, slightly lifting it by means of a thread placed beneath, and then electrifying it for two or three minutes by powerful induced currents. "The artery of the corresponding ear became contracted until it was no longer perceptible. On ceasing the electrization, the artery regained its size little by little; and finally became larger than it was before the operation. After an instant, the temperature of that side was elevated above that of the other." Duchenne considers that the dilatation of the vessels of the ear was produced by paralysis of the vaso-motors, but that the current used was too powerful, and he asks whether there is not some cause for surprise that the sympathetic, already exposed to the air and perhaps more or less injured in the dissection, was not killed by the strong current, and that the vessels could again regain their normal calibre. He says:—

> "To proceed thus with experiments the object of which is to study the action of induced currents upon the nervous system, is but to contribute to toxicology. We know that there are certain poisons which, in small doses, increase the action of the heart, but which would arrest that action if given in large doses. To expect a therapeutic action from such a manner of applying induced cur-

rents is like maintaining that paralysis may be as readily cured by a thunderbolt as by electricity wisely and methodically applied."

"There is certainly no need of experimental medicine to inform us that in its therapeutic aspect, localized faradization is a two-edged weapon. Empirical clinical observations very soon convinced me, at the beginning of my electrotherapeutical researches, that localized faradization, if applied to a muscle or nerve in too full a dose, or for too long a time, may increase or even produce paralysis or atrophy, instead of curing either. It was such clinical observation that led me to lay down the precept that muscular faradization should be moderate in degree, and that neither the whole application, nor the application to any single muscle, should be unduly prolonged."

"With a powerful induced current contracting the vessels during its passage through the sympathetic, and producing, after its cessation, a temporary diminution of their contractibility (and hence their dilatation), the same authors have compared the relatively infinitely feeble action of continuous currents upon the same sympathetic, 'under the influence of which,' they say, 'the activity of the circulation was promoted during their passage, and for a long time after their cessation.'" (p. 151.)

Further on he says—

"Partisan and defender, as has been seen already, of the existence of different physiological properties in the different kinds of electricity, although the reason of such difference has not at present received complete explanation from actual physical data, I was disposed to hail the discovery of a special difference of action between the continuous and the induced currents as a triumph of experimental medicine, applicable to therapeutics. But I must add that there remained in my mind some doubt with regard to the reality of the assigned difference; because in the comparative experiments, the forms of current had not been applied in equivalent force.

"It was, therefore, important to verify the results said to have been attained, and the following is a summary of experiments made upon rabbits by myself, in conjunction with my learned friend M. Liégeois, Professor of Physiology to the Paris Faculty of Medicine. Our results are far from agreeing with those of MM. Onimus and Legros; and show that, in equivalent doses and under similar conditions, the continuous constant and the induced currents, when passed through the great sympathetic, exert an identical action upon the vasomotors.

"*Experiments.*—A continuous constant current (from a pile of from fifteen to thirty sulphate of lead elements) passing through the sympathetic in a portion three or four millimetres below the superior cervical ganglion, produced a slight but manifest contraction of the vessels, and a decoloration of the ear on the same side, during the whole time of the experiment.

"When the sympathetic nerve had previously been strongly excited, or, in other words, when its excitability had already been more or less exhausted, as by the passage of a powerful induced current, or by section, the same continuous current of thirty elements, or even of fifteen, produced, instead of contraction of the vessels, their dilatation during the whole time of the experiment.

"An extremely weak induced current (the minimum of the extra current of my volta electric apparatus passed through a column of distilled water twenty-two centimetres in height), and localized in the sympathetic in the same manner for three minutes, produced a slight contraction of the vessels of the ear during the first half minute, followed by dilatation during the rest of the experiment.

"The same proceeding, repeated upon the sympathetic of a rabbit that had been subjected to a strong induced current for three minutes, an hour previously, but in which the ear had regained its normal vascularity, immediately produced dilatation of the vessels which rendered their finest ramifications visible for three minutes.

"A strong induced current passing in the same manner through the sympathetic of a rabbit, whether it had been the subject of previous experiment or not, produced during the whole time of its passage (three minutes), a considerable shrinking of the vessels; followed, when the current was withdrawn, by an enormous and long persistent dilatation.

"Interrupted galvanic currents passed through the great sympathetic, acted upon the ganglionic vaso-motors in the same manner as induced currents. (pp. 151, 152.)

The conclusions drawn from these experiments are—

"That a continuous constant current, directed upon the exposed great cervical sympathetic of a rabbit, the excitability of which has not been exhausted, (neither by electrization in prior experiments, nor by manipulations, nor by long exposure to the air), produces, like an induced current of equivalent (*i. e.*, very feeble) strength, a slight contraction of the vessels that are controlled by the nerve.

"That the same current acting upon a nerve already exhausted, can no longer produce contraction of vessels, but only moderate dilatation.

"That a powerful induced current, localized in the sympathetic, produces a considerable contraction of the vessels, followed, after the experiment by enormous and protracted dilatation; and that a powerful intermittent galvanic current acts in the same manner.

"Finally, as a corollary to the foregoing, that contrary to certain statements, the continuous constant currents and the induced currents in equivalent doses exert an identical action upon the sympathetic and vaso-motor nerves." (pp. 152, 153.)

This question as to the identical action "of the induced and continuous constant current is another of the disputed questions to which we have previously referred. That there is a difference would, we think, be generally claimed by electricians, while there would probably be quite a diversity in the views entertained as to the essential nature of the difference. Beard and Rockwell regard it as mainly a difference of *degree.*

The section which treats on trophic or nutritive nerves is one of great interest, but must be carefully read to be fully appreciated, and we forbear to enter upon the subject further than to allude to the question raised by Duchenne as to whether certain nervous tubes found in transverse sections of the medulla, cord, and anterior and posterior roots may not be in part the origins of the great sympathetic, or perhaps the dilatator nerves of vessels and the trophic nerves. The tubes present the same diameter as others which have been found in transverse sections of sympathetic ganglia.

In treating of the galvanic current, the author states that at the commencement of his researches, excitation of nerve trunks by continuous currents, seemed to him the method best adapted for the treatment of paralyses. He was much impressed with the experiments of Marianini, Nobili, Matteucci, and others, on animals, but was unable to realize similar results in man. As is well known, he charges Remak with dealing in "theories and hypotheses," and here Ziemssen is of similar opinion, since he says, "We see into what a chaos of hypotheses the dogmas of Remak conduct us."

Duchenne disbelieves in the galvano-tonic reflex contractions which Remak believed to have observed as the result of the passage of the continuous current in patients suffering from hemiplegia, consecutive to cerebral hemorrhage. In one case

"Remak passed the continuous current of from twenty to thirty of Daniell's elements through the right crural nerve, and he saw, after thirty or forty seconds, the segments of the upper limb, and the fingers of the hand of that side which had been strongly flexed, extend themselves completely, while analogous effects were produced in the lower limb by treating the median nerve in the same manner."

Duchenne repeated Remak's experiments, as he says, "many times." He occasionally observed the contractions, but regarded them as not especially due to galvanism, but as a condition liable to follow most excitants. He says:—

> "In one of the patients I several times produced reflex contractions in the paralyzed lower limbs, while causing the passage of a strong, continuous current, now through the median, now through the crural nerve. The leg was extended upon the thigh, the forearm upon the arm, and, at the same time, the hand was opened. The patient, a woman thirty years of age, pointed out to me that the same thing happened nearly always when she yawned, or experienced any emotion, especially upon awaking in the morning. In none of the other patients could I produce reflex contractions, whatever might be the intensity of the continuous current, or of its passage through the nerve. I remarked nothing but contraction of the muscles governed by the nerve excited. The patients, however, told me that their flexed and contracted limbs often became extended, and that their hands would open when they yawned or sneezed, or under the influence of any movement made with effort." (p. 198.)

He also adds, that if this method really cured the paralytic contractions subsequent to cerebral hemorrhage, the theory, as to its therapeutic action would be of little consequence. But since this condition has been shown to depend upon the inflammatory state of the secondary sclerosis of certain nervous bundles, which, when the optic thalami or corpora striata are the seats of hemorrhage, extends to the lateral columns of the opposite side, beginning from the tenth to the fifteenth day, he considers the treatment as of little value. This consideration, however, seems to lose some of its weight by what is said in the context, for after observing as an exception that, in *some cases*, he had observed a diminution of the contractions, and an improvement in the motility by Remak's method, he adds that he had sometimes obtained the same by faradizing the antagonists of the contracted muscles. This, however, is not just the mooted point, and seems to imply a disposition to believe, that the galvanic current may be serviceable in these lesions, if the same efficacy be acknowledged for the induced current.

As has been said, the so-called galvano-tonic reflex contractions, of which the diplegic reflex contractions are a variety, are denied by Duchenne and Ziemssen, and Dr. Tibbits states in addition, that "after the most careful observation, and equally careful and very necessary endeavour to exclude sources of error," diplegic reflex contraction, "so called, has never been observed in the practice and experimental researches at the National Hospital for the Paralyzed and Epileptic."

There are other points in this work of much interest, such as ascending reflex contractions from articular injuries, and the relation of the will to the electric current in the synopsis from Ziemssen, but we will only mention them to lead others to study a work which is replete with original observations and starting-points for further study. With regard to views to which we hesitate to yield an assent, it must be remembered that the conclusions published in this work are evolved from a long experience, and we feel, concerning a doubtful claim,

"Se non è vero è ben trovato."

The work is not arranged for the convenience of readers. It can hardly be called systematic, but no one who wishes to be well informed upon electricity, and especially the induced current, should be without it. Of course no book of this character is complete without an index, and this is wanting.

Beard and Rockwell's "Practical Treatise" meets very satisfactorily the object for which it was written, and that "is to present in a compact, practical form, all that is now known on the application of electricity to the treatment of disease." It might also be termed a systematic treatise, since the subject is considered under the heads of Electro-physics, Electro-physiology, Electro-therapeutics, and Electro-surgery, thus making the work "more acceptable, both to the majority who seek to consult the distinctively practical portions, and to the few, who may desire also to investigate the subject of electricity in its physical and physiological relations." In addition to these subdivisions which facilitate reference, there is a good index and a glossary of electrical terms.

This volume is one of that useful variety in which practitioners who have given much attention to a particular branch of medical science present in a condensed form the most prominent or reliable views upon it.

The sections on Electro-physics and Electro-physiology are sufficiently full, and will be of much service to the general practitioner as an aid to a fuller understanding of the mechanism of his electrical practice as well as of the general principles upon which the practice depends.

No one ought to be satisfied with merely giving "shocks," and finding that in a certain number of cases such vibratile medicaments were followed by improved health. There must be a good reason for the positive benefits which often follow the employment of electricity, and the more we know of the science the greater likelihood is there of an intelligent application of its principles. The science and the art should be cultivated together.

The section on Electro-therapeutics is well worth reading, and portions of it have already been referred to in this review. The authors dwell in especial detail upon the subject of general electrization, claiming with apparent justice to have first given this method a "distinct and expressive nomenclature," and to have presented the scientific indications for its use; as well as to have properly classified it among remedies.

In the chapter on Galvanization of the Sympathetic, some experiments made by the authors upon the retinal vessels, with the assistance of several other physicians skilled in special departments, are given, and show that the effects of this application are as yet not absolutely settled. We agree with the following sentiment, that "the effects of galvanization of the cervical sympathetic on the retina, like the therapeutical effects, vary more or less with the strength of the current, the length of the application, and the position of the electrodes."

This section occupies the largest part of the work. The different methods of administering electricity are considered and directions given for the application of them. Cases occurring in the Author's practice, some of much interest, are reported with not only the successes but the failures. The view is prominently presented, that medical electricity must be judged like any other remedy from its effects, and clinical experience is held to be the best test for these. Among the interesting topics treated in this section is the reaction of the auditory nerve to the electric current as demonstrated by Brenner. The synopsis here given of Brenner's views will well repay perusal.

The last section, Electro-surgery, treats, as naturally suggests itself, of the application of electricity to surgical diseases. Some parts of this section indicate an almost unnecessary detail. What we look for in a work on electricity is not the number of diseases which may be treated by it, but the many ailments in which it seems to act so satisfactorily, when other remedies fail. The cumbrous instruments necessary for galvanic or inductive medication do not come into play if they can be supplanted equally well by simpler agents. Sometimes the latter fail, and then the efficacy of electricity is occasionally brilliant or else produces a sure though more deferred result.

This work is, we think, of very great value for the general practitioner. It is concise and practical, and up to the requirements of the present time in the physical methods of diagnosis. There are misprints here and there which should be corrected, and it would seem as if in a work of so much merit, expressions such as "outsiders," applied to those who are not members of the medical profession, or "taking hold," as applied to the current, might be exchanged for purer and more established English terms. These are perhaps but trifles after all.

There is a freshness and clearness in Dr. Reynold's lectures which makes them very attractive. The volume is an excellent hand-book for ready reference. Some attention is given to the theoretical branch of the subject, but the author evidently regards this as less important than the teachings of clinical experience. In some diseases the current which should be applied is definitely indicated, but in others he uses such language as: "You may divide your cases into two categories; those which will respond more readily to the one form of electricity or to the other; and you are to use in each group of cases that mode of appliance which produces the most distinct contraction with the least amount of electrical force."

As has been stated in a previous part of this paper, Duchenne attributed very different effects to the current proceeding from the coil which first receives the stream from the battery, or the current of the first coil, and that flowing from the second helix. In strong contrast to this is the statement—

> "There are two terms used commonly about it, and which you may see on batteries of various kinds—'primary' and 'secondary.' It is for clinical purposes an almost useless distinction. The difference between the two has been said by some to be this—that the primary will have a more distinct action upon one set of nerves, and the secondary upon another. But the most marked physiological difference that can be made out between them is that the secondary is of greater intensity than the primary, and will sometimes proceed more deeply into the parts you wish to affect. It is an unhappy use of the word "primary," for the current so named is not a primary current in the sense of being a simple battery current; it is essentially an induced current, or a battery current strengthened by induction." (*Reynolds*, pp. 12, 13.)

Dr. Reynolds states early in his work, in general terms, what may be expected from electricity. We may often cure or relieve our patients, or we may arrest disease; the treatment has its limits, and "only by its appropriate employment within these limits can it be of real service in either diagnosis or therapeutics." Then follows a description of the different kinds of electricity, and as has been previously observed, the author does not hesitate to recommend franklinic electricity in certain cases. In reply to "what can electricity do?" he first speaks of its chemical effects, as we observe them in the coagulation of blood or the heating of the cauterizing wire, and passes on to the "vital" action of the current on "nerves, muscles, skin, and other tissues." "Vital action" he defines as "certain changes of condition in certain tissues, which we cannot as yet explain by what we know of the ordinary 'physical' forces, such as the contraction of a muscle, the circulation in a limb, the sensation of pain, and so on."

After dwelling somewhat upon the application of electricity to the different tissues under consideration and making practical points here and there, he proceeds to treat of the diagnostic uses of electricity.

In this section some attention is given to the distinction which should be made between electric irritability and contractility. As he says, these terms "contractility and irritability have been often used to mean the same thing, and are constantly so employed at the present day. This is in my judgment a mistake, for the one refers to the susceptibility of receiving an impression, the other to the capacity for action." The test of irritability in muscle is its comparative readiness to respond to a weak electric stimulus.

> "But if we take thirty or forty cells, or a faradization machine, we often find that the same healthy muscle will, perhaps, draw the hand out of the water, while the other (the paralyzed muscle) will merely give a little jerk. The healthy muscle in this case, though less irritable, is more strong. The amount of irritability is in inverse proportion to the degree of electric force which is required to bring it into play." (p. 26.)

We would recommend all practitioners who use electricity to read the sections on diagnosis and therapeutics. The directions for treatment are stated clearly and briefly and as with a conviction arising from practical experience. Probably in consequence of professional interruptions or inadvertence, there is a want of clearness or even an apparent contradiction in the following. Dr. R. says:—

> "Another form of electricity—faradization—may also be employed to reduce over-activity. If you find, for example, a man suffering from torticollis—spasmodic wryneck—the sterno-cleido-mastoid and other muscles of one side acting most violently, and turning the head over to the opposite shoulder, you may stop that by passing through the sterno-cleido-mastoid muscle a galvanic current, or by applying weak faradization rapidly interrupted. The interruptions have to be very rapid, for if they are not so, the application only increases the muscular action. * * * * * * Again, in the case of torticollis, where a man's head goes jolting over to one side, you can reduce the over-action by putting the antagonist muscles into action by faradization, and so pulling the head around into its proper position." (p. 59.)

Further it is stated:—

> "The forms of spasm in which electricity has been most commonly used, are 'torticollis,' a spasmodic condition of the muscles of the neck on one side; 'writers' cramp,' and so-called 'histrionic spasm of the face.' It is said that such cases have been cured, but my own experience has been unfortunate with regard to them. I have tried electricity again and again, and in every available form, but have never seen it do any good. * * * In torticollis, for the time being, you can put the head straight by either a strong battery current passed through the contracting muscles, or by faradization of the other side, the muscles of which are often weak; but directly you cease the application, the head goes back again into its abnormal position." (p. 96.)

It is easy to understand how such an apparent contradiction might arise as a result of unexpected interruptions during the preparation of manuscript, but it is also evident that the writer has not expressed himself as clearly as he would wish to do.

We consider the section on "The Therapeutical Uses of Electricity," as of great value, particularly to the general practitioner, and would recommend every one to read the third subdivision of that section. It will be observed that Dr. Reynolds recommends those using faradism to hold the rheophores near together, as in Duchenne's method. This teaching is probably the result of his experience and is a point on which there is a difference of opinion.[1]

In taking leave of Dr. Reynolds's work it is with the intention of keeping it near enough for occasional consultation. It is dense and useful if not voluminous. Certainly, in consideration of the number of readable works constantly issuing from the medical press, it is extremely desirable that authors should condense their writings as much as possible.

Dr. Neftel's work is fragmentary, or, as he states, part of the second volume of his forthcoming work on the galvanic current in its relation to physiology, medicine, and surgery. The author treats of a sublect to which he has given much attention and we shall be very glad to be more familiar with the results of his studies.

There are many points of scientific interest contained in this little volume, and the author evidently writes with a knowledge of his subject. He attaches much importance to the necessity of a complete apparatus for galvanic treatment, and mentions in detail the different instruments necessary to be used in connection with the battery. It is a source of congratulation that at present electrical instruments of the best quality may be obtained in our own country.

We consider the experiment mentioned on page 92, made with the nerve of the galvanoscopic frog, to test the question as to the passage of the galvanic current through the sympathetic nerve, as worthy of repetition and study: also on page 137, a similar experiment with regard to the pneumogastric. With regard to some points which are still undecided we think the author expresses himself, perhaps, too positively.

Still, we will not enter further into the merits of this work at present, which, as previously observed, contains many points of much interest, but wait with eagerness for a fuller exposition of the author's views.

The translation of "Dr. Meyer's excellent treatise" has passed under the eyes of so many reviewers, that we will only call attention to the work as one which should find a place in every collection of volumes upon electro-therapeutics. Although the German nomenclature of electricity is often, as it seems to us, unnecessarily cumbrous, yet no one questions the great value of German labour in the development of electrical science. Dr. Hammond observes that the demand for a second edition has enabled him "to make several corrections in the typography, and to call attention to certain improved forms of electrical apparatus for medical use."

In drawing this imperfect article to a close, we would suggest, with a recent writer on electro-therapeutics,[2] that medical men in describing cases in which electricity has been used, or in writing upon the subject, should employ the terms adapted to the different varieties. To speak of applying faradism or galvanism is a more definite expression than of applying electricity, but even these statements are crude unless the details of application be given. Dr. Radcliffe suggests that

"By applying the method of terminology which Duchenne has so happily used in respect of the induced current to the other forms of electricity, a series of terms is obtained which would be accurate in form as the practice of nomenclature goes, true to science in fact, free from confusion, and particularly convenient in usage. The series would be (1) *faradaic electricity* or *faradism*; and as respects the pathological and therapeutical application of the agency, *faradization*; (2) *voltaic electricity* or *voltaism; voltaization*; (3) *franklinic electricity* or *franklinism; franklinization*."[1]

---

[1] Dr. H. G. Piffard, of New York City, has devised a handle, inclosing two flexible wires, for connection with the positive and negative poles of the induction apparatus. This obviates the necessity of holding the rheophores between the fingers in the somewhat awkward manner recommended by Duchenne.

[2] British and Foreign Medico-Chirurgical Review, July, 1871.

The study of a number of works, simultaneously, upon the subject of electricity, renders it evident that very much still remains to be accomplished in this field. We may picture to our minds a young practitioner, anxious to bestow especial attention to electricity, with reference to the practical employment of it. He would, as a preliminary, endeavour to render himself familiar with the investigations of others upon the subject, and the conclusions to which they had been led. While he would find that on some few points there was a similarity of opinion, on others he would observe a wide variance, and might come to the conviction that this variance depended occasionally on the circumstance that one writer was of sanguine, and another of doubting mood. Thus, "in wandering mazes lost," if not discouraged, he might, while retaining the general principles of the science, turn to the practical application of the art, and here he would very likely meet with a success in some cases absolutely brilliant—a success which would cause him hardly to wonder that Watson's cures by this agent in 1763, were confounded with witchcraft. Certainly the action of electricity, as a therapeutic agent, is in some cases exceptional and most satisfactory.

The future history of medical electricity is somewhat uncertain. Judging by the past, it will be progressive, and will continue to hold a firm place in therapeutics. There are certain results, such as the disintegration of calculi, the cure of aneurisms, the destruction of morbid growths, which have been cherished hopes, but which still remain "so near and yet so far." Knowing that the study of electrical phenomena occupies some of the best medical minds, that a retrospect shows a decided advance in the field; that notwithstanding the doubts and discouragements which have attended experimenters, there is an increased confidence in this agent, we have good reason to believe that the best results of electro-therapeutics are yet to be attained. F. A. B.

---

## Art. XV.—*Third Annual Report of the State Board of Health of Massachusetts.* January, 1872. pp. 329. Boston, 1872.

Nine months ago we noticed at some length the Report immediately preceding the one above named, and commented upon the remarkably high character of the Board. Now, as then, it might safely be said that better appointments could hardly have been made by any scientific or philanthropic body than were here made by the State legislature. Only one member out of the seven composing the Board has been changed. Dr. Bowditch and Dr. Derby, as chairman and as secretary, continue in the offices they have so worthily magnified.

---

[1] Practitioner, vol. i. p. 19, quoted in Dr. Tibbit's Translation of Duchenne.

We sketched, in the article referred to, the general plan pursued by the Board in collecting information. The system has been continued of appointing prominent physicians in all the towns, as sanitary correspondents. These, as heretofore, have not only presented general health reports, but have replied to particular queries addressed them by the secretary concerning special subjects of investigation. When any particular line of inquiry has seemed to require the skill of an expert, to elucidate the facts and draw from them the legitimate conclusions, the Board seem to have selected the men best fitted for the work.

The expenses of the Board, though five hundred dollars greater than for the preceding year, are still wonderfully small. Out of the standing appropriation of $5000, only $2850 has been expended. We believe the intelligent people of the old Bay State will feel that the noble volume of essays before us is alone worth much more than the entire expense. Indeed if the cost of this report be compared with that of many other State, municipal, and national documents, some startling contrasts may be found.

The general report on the "*Health of Towns*," made up principally from the correspondence received, contains few matters requiring especial notice. Additional facts of interest continue to be presented as to the connection between typhoid fever and local conditions, concerning which, it may be remembered a large and curious mass of information was given in the second report.

A very interesting account is given of extensive and unaccountable lead-poisoning occurring among the operatives in a gingham factory. It was only after several weeks of research that the source of the symptoms was discovered in a yarn dyed with chromate of lead. A needless amount of the pigment was used, in this instance; and the weavers habitually threaded their shuttles by sucking the yarn through the eye of the shuttle with their mouths. A hook was devised and ordered to be used for threading; and the dyeing ordered to be more carefully conducted. The epidemic speedily ceased. This gratifying instance of the triumph of medical science is creditable alike to the physician who made the investigation and to the Board through whose action such researches are undertaken, or encouraged, and made to contribute to the health and the enlightenment of the human race.

Another essay which may be regarded as a continuation or sequel of a paper in the second report is the one entitled "*Analysis of the Correspondence on the Use and Abuse of Intoxicating Drinks throughout the Globe, . . . or Intemperance as seen in the Light of Cosmic Law.*" The earlier paper consisted of a voluminous correspondence, with a brief summary of its teachings. The present essay, while giving some additional letters from foreign lands, consists principally of an elaborate presentation of the generalizations and inferences which Dr. Bowditch thinks legitimately derivable from the facts drawn from all races, climates, and conditions. Dr. Bowditch begins by stating that the use of stimulants is due to a natural and universal instinct. This once admitted, he argues that it is both idle and wrong to attempt to eradicate the craving. Like all natural tendencies it is implanted for wise purposes and is to be controlled, not exterminated. Attempts in the latter direction he thinks full of harm.

Taking up the results derived from his correspondents he proposes to consider intemperance in relation to isothermal lines, to race, to the kind of stimulant used, and to the prevalence or absence of grape-culture.

While these divisions of the subject are not very closely followed, they yet give an idea of the direction and tendency of the doctor's views. In warm countries he finds intemperance almost unknown, except among foreigners who may have brought with them the appetites of other races and other climates. In the high latitudes it is that intemperance becomes so terrible a curse.

Other things being equal, a country in which the grape thrives exhibits much less intemperance than one where it does not flourish.

National habits and customs, and to some extent legislation, have also important relations to temperance. The existence of open bars, the habit of "treating," and heavy duties on the pure light wines of France and Germany, are regarded as encouraging intemperance.

Progress in the temperance reform in our land is to be looked for, in the opinion of our writer, not from prohibitory legislation, but from extended cultivation of the grape, in popularizing the German beers, and German methods of drinking. For the open bars at which men pour down deep draughts of fiery and often poisonous spirits, he would strive to substitute the "Garden" or "Hall," where men sit with their wives and children and slowly sip a beverage scarcely so potent as tea.

Much may be done, Dr. B. thinks, in the way of creating a more wholesome public sentiment. Let the young be impressed with the degrading character of excess, rather than with the idea that all stimulants are necessarily evil. Strive to build up a distaste for the two prevalent American customs of "treating" and drinking at bars. In the training of children Dr. Bowditch regards two courses as almost equally evil—one by which without caution, or guidance, or control, they are allowed to acquire the habitual use of stimulants; and the other in which they are taught to look upon all stimulants as equally, wholly, and necessarily bad. In the latter case, when home restraints are removed, a dangerous reaction of feeling too often occurs; for, finding that facts have been misrepresented and that an innocent pleasure has been denied, young men may rush into the very excesses which their training was intended to render impossible. The greatest safety, he thinks, is to be found in a middle course.

It requires some boldness, at this day and in Massachusetts, to uphold views such as these. No one who knows the author of this paper, however, will for a moment doubt that his views are as sincerely held as they are vigorously expressed. Whether or not his ideas are all judicious, it is certain that the advocates of different views have shown so much bigotry and intolerance of opposition that it is well to have these more moderate opinions, and perhaps more practicable methods, so fully and ably set forth.

"*Arsenic in certain Green Colours*," by Dr. F. W. Draper, is a paper of great value, prepared with much care and research. Two pigments in common use are named, as containing poisonous amounts of this drug. These are, Scheele's green, made of arsenite of copper; and Schweinfürt green, made of aceto-arsenite of copper. Practically, the two are often confounded, and called by each other's, or a common, name. The first contains 55 per cent., and the second 58 per cent., by weight, of arsenious acid, or "white arsenic." Beauty of tints, with ease and cheapness of production, have rendered this colour very popular. One English maker of paper-hangings stated, in 1860, that he used two tons of arsenic weekly. Dr. Draper goes on to point out the forms in which this deadly poison enters our homes and our workshops, and the evil effects resulting, often wholly without suspicion of their true cause.

In making the green leaves of the artificial flowers worn by ladies, the arsenical pigment is made into a paste with water and starch or gum arabic. This is spread upon, and rubbed into, cloth, much as the surgeon applies plaster of Paris to his moistened rollers. The more the cloth and pigment are manipulated the better the colour adheres. No mordant is used, to fix, by chemical action, the colour in the fibres of the cloth. The union is simply mechanical, as in the case of the plaster and muslin. When the material is dry, it is cut, stamped, moulded, and formed into the verdure that so beautifully imitates the natural setting of buds and flowers. In these processes much of the colour comes off as a fine dust. Still worse, in some cases the leaves are dipped in melted wax and the powdered pigment sprinkled on them from a dredging box. Of course, during this process the air becomes filled with floating atoms of deadly poison. While it may well be believed that the workers upon these dangerous ornaments are the persons most liable to suffer, we can well understand that dealers and even wearers may not be wholly safe. Investigations in England, France, and Germany reveal most deplorable facts as to the debility, nausea, diarrhœa, eruptions, ulcers, inflamed eyes, and other affections prevailing among the men and women engaged in this manufacture. Death has in some cases directly resulted. That it has not oftener followed is due to the usually gradual character of the arsenical poisoning, which obliges the sufferer to give up work, and remove from the cause of disease, before the recuperative forces are exhausted.

Green tarlatan, likewise owes its colour to the mechanical presence of the same deadly dye, insecurely fixed by starch or sizing. Some specimens have been found to contain nearly one-half their weight of pigment. A sample analyzed by Prof. Nichols, of the Mass. Institute of Technology, gave 8.21 grains of arsenious acid to the square foot, corresponding to three or four ounces, in a ball-dress. One dress which seriously poisoned its maker, in France, was found to hold eight ounces. Many instances are recorded where illness was traceable to working upon this fabric. The essayist suggests, too, that a portion of the responsibility for the notorious feeble health of dressmakers may very possibly rest upon these green materials.

There are comparatively few records of illness caused by merely wearing green leaves and tarlatans. These, too, may have been due to unusual susceptibility to the poison. But even if this be the fact, it should be gravely considered whether it be right in any way to encourage the manufacture of adornments so injurious to the makers.

One fact of importance to parents is that the wrappers of bonbons, and in rarer cases the confections themselves, are stained with the arsenical green. Green-painted toys, and the cakes of green in boxes of toy water-colours, are also very poisonous. It would seem proper that our local boards of health should inspect toys and sweetmeats with a view to preventing the use of dangerous colouring matters.

Green paint on our inner walls ought also to be carefully avoided, unless known to be non-arsenical.

Green papers are to be avoided or used with caution, unless we have ascertained their colour to be due to a harmless dye. Tickets, cards, and fancy papers are often picked up by young children and put at once to their lips. Wall-papers, like tarlatans, contain often very large amounts of arsenical green, very loosely held between and upon the fibres. Especially those with a rough, unglazed surface, part with their colour very easily. The essayist states a large number of instances where the most serious illness was clearly due to green wall-papers. The cause not being at first suspected, in many cases the victims, convalescent after removal for change of air, or after confinement in a non-poisonous bedroom, have suffered relapse on returning to the green-papered office or sitting-room. The cases given are very numerous, fully reported, and perfectly conclusive in proof of the frequency of serious disease resulting from green paper-hangings.

From many of these arsenical papers the colour easily comes off on the hands and the clothes. After brushing the walls it may be seen in the form of green dust lying on the furniture. A certain paper which had been on the walls for four years, and which had proved very injurious to health, was on that account removed. A certain measured portion being analyzed indicated the presence on the four walls of the room of no less than one-half a pound of white arsenic. Workmen applying and removing such papers have often suffered severe, though transient, illness.

Interleaved with the pages of this essay Dr. Draper shows us some specimens of arsenical papers. A glazed sample is said to contain 8.67 grains of arsenic to each square foot. One unglazed sample, having a tint so delicate as hardly at first to be recognized as green, gives 5.42 grains; another, a rich bright emerald, 29.32 grains.

Dr. Draper justly remarks that the importance of the facts and cases given is not affected by the possibility of some men living for years apparently unharmed by exposure to similar influence. Were extreme tolerance the rule, and such harmful effects as he narrates only the exception, he would still have shown the use of such wall-papers to be dangerous and reprehensible.

A valuable article by the secretary, Dr. Derby, treats of "*Mill Dams and other Water Obstructions*," as affecting the public health. In the earlier years of the New England colonies the natural falls of hundreds of streams were used to move the village grist-mills. As manufactures multiply and water-power is more and more in demand, dams are built to heighten the fall. Of course this, to a variable extent, interferes with the drainage of the country above. A nearly level tract, formerly dry, may be converted into a swamp. The flow of the stream becomes sluggish. To provide against the long summer droughts, great ponds or reservoirs are formed in which water stagnates, and into which probably is thrown or poured all manner of filth from the houses of the operatives. When, under the burning suns of August and September, the natural flow ceases, the reservoir is drawn upon, and partly or wholly emptied. The morbific influence of the drying of such a surface in hot weather scarcely needs statement. In the elaborate paper on typhoid fever, forming so important a portion of the second report, noticed in our October number, it is stated that precisely this cause was assigned for local epidemics of the disease, in twenty-one out of one hundred and sixty-three towns, far exceeding any other single cause. It is recorded that in 1828 a dam was built across the Housatonic River, two miles south of the line between Massachusetts and Connecticut. This, affecting the height of water for ten miles above, was followed by so much intermittent that the people obtained legal order for its removal as a nuisance.

In this connection Dr. Derby expresses the conviction that sporadic intermittent is not now, as twenty-five years ago, wholly confined, in New England, to the Housatonic and southern Connecticut valleys. He, moreover, remarks that typhoid often seems modified by an intermittent tendency, and that quinia is becoming more and more useful as a febrifuge. As a confirmation both of the increase of intermittent and its connection with dams and mill-ponds, some striking facts are given concerning the recent epidemics in the neighborhood of New Haven.

Dr. Derby very forcibly exhibits the evils of tide-dams in and near large towns. These, intended to utilize as power the ebb and flow of the tide, through inlets and estuaries, cause the permanent retention of masses of water in places which otherwise would be completely emptied and filled twice daily. The basin thus formed, if near a city, receives sewage and becomes a foul and putrid sink. Many years ago large numbers of these tide-dams, with their mills, were built along the Massachusetts coast. Wherever these have become surrounded by a dense population, they have become offensive and dangerous nuisances.

A brief paper on "*Adulterations and Impurities of Food*," by Henry B. Hill, gives these results: Fruits preserved in tin cans, though presenting traces of lead, copper, and tin, are practically harmless. Of vinegars, those sold as cider vinegars are almost always genuine, though sometimes watered, while the wine vinegars contain frequently more or less free sulphuric acid. Two samples were found to contain lead, one in terribly large amount, one-half of one per cent., equivalent to four and one-half grains of sugar of lead to the fluidounce. In these the poison was derived from leaden faucets, most wrongfully employed. Of seven samples of so-called coffee, sold in pound packages ready for use, one contained no coffee whatever. Four contained from fifty to seventy per cent. Peas, beans, and grain, chiefly wheat, entered largely, and chiccory was found in two packages.

A report is presented by Dr. F. E. Oliver, of Boston, upon the "*Use and Abuse of Opium.*" The paper is intended to direct attention to the employment of this drug as a stimulant and intoxicant. Two questions were addressed to the medical correspondents of the Board in the various towns of the State. The first as to the use of the drug for other purposes than relief of pain; the second, as to whether or not such use were increasing. Two-thirds of the one hundred and twenty-five physicians answering, report a greater or less amount of illegitimate consumption of opium in their towns. Many druggists, also, in Boston and in smaller places, state that large quantities of the narcotic are used without prescription. From the opinions of prominent importers and druggists in New York and Boston, Dr. Oliver estimates that at least one-half the opium imported is used as a stimulant. This estimate, moreover, reckons the amount used in quack remedies with that otherwise prescribed; and excludes from consideration the drug prepared for smoking. As to the extent to which the "opium habit" prevails, the information is, as might be expected, indefinite and various. Certainly its prevalence is sufficient to require the practitioner to remember its symptoms when he encounters forms of impaired health for which he cannot at once account.

As to the increase of this illicit consumption, the indications derived from custom-house returns are very startling. In view of the great increase in the use of milder and newer anodynes by physicians, and a clearer perception of the dangers of even a medicinal use of opium, we believe we are warranted in assuming that the legitimate consumption of the drug has not of late increased out of proportion to population. From 24,000 pounds in 1840, we have risen to an importation of 154,841 pounds in 1870. The writer goes on to state that the amount for the first half of 1871, is 123,000; and hence estimates 246,000 pounds for the entire year. The increase from 1840 to 1870 is sufficiently alarming; but that from 1870 to 1871 is, if correctly estimated, truly terrible. May it not be possible, however, that the arrivals of opium occur principally in the first six months? Dr. Oliver does not state whether he inquired as to this point. At all events, if our assumption be correct, that physicians are not prescribing more and more opium year by year, there must be a most serious extension of the "opium habit." No doubt it is true, as intimated by Mr. Hayes, Mass. State Assayer, that of late years opium enters more largely than ever into proprietary and family medicines, "cough mixtures, lotions, liniments," etc. It has been found too, he tells us, in liquors. But practically and in effect, this sort of use belongs rather to the illegitimate than to the proper medicinal use. One of the most diabolical manifestations of the sordid and heartless quackery which thrives in this age, is seen in the fact stated by Mr. Hayes, that some of the advertised "cures" for opium-eating contain potent doses of morphia. One of these, if taken as directed, would give six grains of sulphate of morphia daily. Truly the last state of the unfortunate believer in this "cure" would be worse than the first! Dr. Oliver directs attention to the abominable "cordials," "cholera cures," and "soothing-syrups," as not only destructive of infant life, but as very probably sowing the seeds of an irresistible craving for stimulants in after life. When we learn that a recent analysis of "Winslow's Soothing Syrup" gave one grain of morphia to the fluidounce, we are prepared to expect any amount and degree of cerebral or nervous disorder in the adult life of any child who might outlive its frequent administration.

Dr. Arthur H. Nichols contributes a very full and thorough consideration of the "*Effects on Health of the Use of Sewing-machines moved by Foot-power.*" Not long after the sewing-machine came into common use, rumours began to be current concerning its ill effects on the health of its workers. A number of physicians acting independently, and after investigations of varying extent and thoroughness, joined in the popular opinion, especially laying to the charge of the machine the production or aggravation of the diseases peculiar to women. Some went so far as to assert that paralytic and peculiar nervous lesions sometimes resulted. Dr. Nichols has very fully and carefully investigated the whole subject, both through questions addressed to the sanitary correspondents, and through an extended personal visitation and inquisition. His researches clearly indicate that continuous labour at machines moved by the ordinary treadle is too severe to be long pursued by women of delicate organization, without impairment of health. Such women, labouring often in close and crowded work-rooms, are liable to become the subjects of general debility. This, eventually, may manifest itself in many ways. But, moreover, there seems now to be no doubt of the fact that over-work at the sewing-machine treadle is peculiarly liable to cause hyperæmia, or congestion, of the pelvic organs. This, when we consider the constant action of the muscles connecting the thighs with the pelvis, especially the psoæ muscles, combined with a stooping posture, and perhaps tight corsets or waistbands, is not at all strange.

While what we have just stated seems fully supported by the evidence, it is equally true that in some work-rooms, exceptionally well ventilated, and where the peculiar character of the work allows frequent pauses in the motion, evil results may be hardly noticeable. Women of strong constitutions, too, and not disposed to uterine disease, may labour for years, even amid unfavourable surroundings, without apparent injury.

As to the use of the foot-moved machine in private families, where other household avocations occupy the greater part of the time, as a rule it may be confidently asserted that no ill results follow. The average American woman may safely use her machine at odd minutes or hours, for one, two, or three hours daily. Nevertheless, in cases of known weakness of the pelvic viscera, it will be the part of prudence to inquire pretty closely as to any connection between the machine and the occasional exacerbations of the malady.

The excessive severity of the labour required to run sewing-machines by foot-power, ten hours daily, is sufficiently well established to call for some remedy. Dr. Nichols, therefore, points out instances which prove that in large establishments, the introduction of steam-power is not only humane, but economical. Each worker, when assisted by steam-power, can do much more work daily, and preserve much greater health and strength. Where the operative works at home, or where steam-power is inaccessible, two improved treadles, the "Parsons" and the "Hall," are very highly commended. If it be true, as indicated by the few experiments given, that these so greatly lighten the labour as to wholly prevent the exhaustion caused by the old treadle, public opinion should demand their introduction into all workshops where foot-power is used, and upon all newly-built machines.

One of the first objects proposed to itself by the Board, on its organization in 1869, was the regulation and reformation of *slaughtering, and the processes connected with it.* The present report gives a full account of the investigations made, reforms attempted and results gained. In the report published in 1870, the unwholesome, wasteful, and every way objectionable character of existing slaughter-houses and their adjuncts, was clearly set forth. Large abattoirs were urgently recommended, which should include all improved facilities for utilizing offal in such manner as to prevent, or totally consume, all offensive vapours. The possibility of attaining the end desired was clearly shown, with the added advantage of important revenue to be derived from matters hitherto wasted. But, as is often the case with proposed reforms, the men who were to be most directly benefited were the most bitter in opposing any change. The killing for the Boston market was almost wholly done in private establishments clustered together in the suburban town of Brighton. Here population was largely increasing, and room was desired for residences for men doing business in the city. The cattle-pens, slaughter-houses and fat-rendering establishments, never scientifically constructed or managed, were becoming more and more intolerably offensive. Feeling the urgent need of speedy relief, the Board obtained the passage of an act authorizing the incorporation of a stock company which should have the right to build grand abattoirs, provided with all appliances for securing the best results, as to excellence of meat, utilization of refuse, humanity, and economy. These were to be constructed according to plans of the Board, and to be grouped together very near the site of the existing slaughter-houses. Seeking in every way to conciliate, and to remove all reasonable grounds of opposition, the Board hoped for the cordial coöperation of the butchers. Prejudice, however, was too strong; the butchers would not take stock, and the company could not organize. At the next session of the legislature these facts were stated and further legislation asked. The importance of the subject was recognized and an additional act passed. This empowered the Board to close all establishments which their judgment deemed inimical to "public health, or public comfort and convenience." Supported as it was by a rapidly strengthening public opinion, this act brought the butchers to their knees. They humbly begged to be allowed to remain in their old houses, pledging themselves to make all changes and improvements that the Board should suggest. Convinced of the necessity of a radical change, the Board firmly refused. Complaints were very soon made, and in Brighton alone, under the new law, some six or eight houses were closed by the Board. This firmness soon bore fruit. Conferences were held, and very soon the butchers were organized as a joint-stock company in the manner and under the restrictions prescribed by the original act. A large tract of land, between and closely adjoining the two great cattle-bearing railways, on the Charles River, and perfectly adapted to its object, is already purchased. Upon this will be erected buildings for the reception, feeding, killing and dressing of all cattle, sheep, and pigs needed to supply the city markets; and also all the varied establishments for preparing the hides, the fat, the blood, and all products whatsoever. Nothing will be wasted. It is believed that the entire system can and will be made entirely inoffensive. All will be constructed, and afterwards conducted, under the authoritative supervision of the Board. A rigid inspection will follow each beast from his arrival in the cattle-train till his dressed meat is exposed in the stalls and his other portions converted into valuable and innocuous manufactured products. Cruelty will be prevented; the consumers will be insured wholesome meat; and adjoining residents will be protected to the fullest possible extent from all the annoyances which have usually surrounded the slaughter-house. To this great central abattoir the Board have power to compel the removal of any person carrying on the slaughtering or allied trades within six miles of Faneuil Hall, if in their judgment the public good require it.

It would take too much space to set forth the improved processes by which the Board confidently expects to destroy bad odours, and to make from products formerly nearly valueless, a most valuable fertilizer. Suffice it to say that all the details seem to have been thoroughly worked out and arranged.

Thus bravely fought and nobly won was the battle of the Board against the butchers. Of its hard-earned victory it may well be proud. As to the people of Boston and its neighbourhood, those who know the terrible amount of unwholesome meat formerly sold, will realize that they have reason to be grateful for blessings even more substantial than relief from bad smells.

Dr. James C. White, who, though still a young man, is prominent as a dermatologist, contributes an elaborate article of some fifty pages upon "*Vegetable Parasites, and the Diseases caused by their Growth upon Man.*" After stating the fungous nature of these organisms, and alluding to the possibility of confounding their accidental with their causative presence, Dr. White names three common forms or types of skin disease which are undoubtedly produced by the action of the three fungous growths which accompany them. These are, favus, herpes tonsurans [in reality including all the various forms of ringworm], and pityriasis versicolor.

Each of these, our writer claims, is a perfectly distinct disease, having each its peculiar parasitic cause.

Under the second of these heads Dr. White describes a number of differently named eruptions which he believes to be identical in essence, and caused by one and the same fungus. Herpes tonsurans, tinea tonsurans, herpes circinatus, sycosis, eczema marginatum, "and the majority of the cases of parasitic disease of the nails, called onychomykosis, are all caused by the growth of one and the same fungus, hitherto generally entitled trichophyton tonsurans." The dissimilarity in the appearance of some of these forms of disease he attributes to the site and to the stage of growth. In regard to sycosis or mentagra, Dr. White points out the additional and important fact, that while the outward manifestations to which these names are applied are usually the result of aggravated and chronic ringworm, as proved by its being sometimes observed to commence like simple ringworm, and by its containing the same fungus, and by its giving rise, by inoculation, to simple ringworm, yet nevertheless very similar appearances occasionally result from a simple follicular inflammation wholly free from fungous agency. He believes also that the contradictory evidence of competent observers as to the etiology of alopecia areata is explainable in the same manner, or that one class of cases depends on simple atrophy of the hair-bulbs, and another on the presence of a parasitic fungus.

Dr. White makes a very forcible and conclusive argument for the specific and individual character of the favus fungus, against those writers who have striven to prove it to be only a development of the one causing ringworm, and against those who believe both growths to be but modifications of common "mould." The weight of reason and evidence, it seems to us, is strongly on his side.

Attention is directed to the frequency with which favus and ringworm may be observed on the lower animals, containing fungi identical with those which afflict the human subject. The doctor saw some reason to conjecture that the common mouse may be the original victim of the favus fungus and the means of its communication to man. Cats and dogs have been observed to contract the disease from diseased mice.

This very able and instructive paper closes with some practical remarks as to the modes of contracting, and of avoiding, these disgusting affections. The chief lesson drawn from Dr. W.'s knowledge and experience is that we should carefully avoid the barber's shop. Keeping private mugs, soap, brushes, and razors is not a trustworthy safeguard. The operator's hands, his strop, or possibly his aprons or towels, may convey the contagion. Dr. White has several times observed ringworm on the hands of barbers.

This essay is full of interesting observations and thorough discussions, much of which we have not even hinted at. The paper is well worthy to be published in a separate form as a permanent and valuable contribution to the literature of dermatology.

A brief essay on "*Smallpox*" in Massachusetts presents nothing worthy of especial note. Until 1870 the deaths from this disease had been below the average of former years. In 1870, 131 deaths occurred, nearly one-fourth in Holyoke. The number for 1871 had not yet been reported, but was undoubtedly larger than before, and principally in a very few towns. Circulars were sent out to all the towns, urging the necessity of thorough vaccination and revaccination, and asking information upon the subject.

The Board recommend that an existing law, requiring vaccination before two years of age, be amended to read, before six months. Also that local health officers have full power to remove and isolate cases of variola. The correspondence would seem to indicate that, as in other States, vaccination had been culpably neglected.

An essay on the "*Proper Provision for the Insane*" is contributed by Dr. Edward Jarvis. This gentleman is acknowledged to be the ablest statistician in the United States. Better than any other he has learned to distinguish between what figures really prove, and what they may be made to seem to prove. He has been interested in the study of insanity for many years. His practical familiarity with the disease, however, has not been derived from constant intercourse with the varied types to be found in the crowded wards of large hospitals; but rather from the small number of selected cases who have resided as invalid boarders in his private house.

It is a little difficult to understand the drift of the present article. In the outset Dr. Jarvis enlarges on the partial character of many cases of insanity, which he compares to broken limbs, or derangements of special organs, leaving the rest of the body unaffected. Only the parts which are diseased, he says, require to be rested or restrained. Existing hospitals for the insane, he intimates, carry restraint or forced rest, too far. He seems to think that by some changes in their structure and management the degree of restraint can be more nicely graduated and better adapted to the exact needs of particular cases. A number of cases are described in which patients afflicted with "mild" or "partial" insanity have recovered promptly on being sent to visit friends, or to board with judicious strangers, or even at home under a careful adaptation of their surroundings to their peculiar needs. Still, he frankly admits that for the vast majority, even of "mild" cases, the hospital is the only means of cure practically available. Only the exceptionally wealthy, or those having even more exceptionally discreet and self-sacrificing friends, can expect to find in private families the curative influences required. After some further expansion of his somewhat vague objections against the existing hospitals—which, yet, he acknowledges have done and are doing a noble work—he proposes as a remedy for all faults, the adoption of the "American cottage plan." This, as some of our readers will remember, consists of an ordinary hospital as a centre, having connected with it various detached buildings constructed like private dwellings. How it is thus expected to secure to poor and even pauper insane advantages which otherwise can scarcely be attained even by the most wealthy, we do not comprehend. In an article in the April number of this Journal we fully stated what seemed to us to be insuperable objections to this much-vaunted plan. Fully agreeing with Dr. Jarvis that there is room for improvement in our hospitals, we do not believe it is to be sought for in the direction which he has somewhat indistinctly indicated. Certainly, in the present state of public opinion, we cannot approve of any new departure in hospital construction which will increase the cost of these institutions. B. L. R.

## ART. XVI.—"*Hospitalism.*"

1. *The Works of Sir James Y. Simpson, Bart.* Vol. II. New York: D. Appleton & Co., 1872.
2. *A System of Surgery.* Edited by T. HOLMES, M.A., Cantab., 2d edition. Vol. V. New York: Wm. Wood & Co., 1871.
3. *Medico-Chirurgical Transactions.* Vol. XLII. London: 1859.
4. *The Same.* Vol. XLVII. London: 1864.
5. *Guy's Hospital Reports*, 2d series. Vol. I. London: 1843.
6. *The Same*, 3d series. Vol. XV. London: 1870.
7. *Saint Bartholomew's Hospital Reports.* Vol. V. London: 1869.
8. *Saint George's Hospital Reports.* Vol. I. London: 1866.
9. *The Lancet.* Vol. II. London: 1869.
10. *The Boston Medical and Surgical Journal*, new series. Vol. IX. Boston: 1872.

THE ravages of Hospital Gangrene in the hospitals of France, during the last century, prompted Ponteau to question whether or not those institutions of mercy were actually more pernicious or more useful to society; and a similar query, propounded a few years since by the late Sir James Y. Simpson, has given rise (as our readers doubtless know) to a controversy only surpassed in acrimony by the celebrated "Acupressure Controversy" which was originated by the same eminent obstetrician and author, who, in addition to all his other talents, certainly possessed, in an eminent degree, that of exciting the indignant opposition of those surgeons and surgical writers with whom he came in contact.

Now that the grave has closed over the body of the illustrious author who started the discussion concerning "hospitalism," and now that the winged words by which he being dead yet speaks are reaching, in the goodly volumes which constitute his collected works, a much larger audience than listened to his living words at that celebrated Leeds meeting of the British Medical Association, it seems an appropriate time to take, as far as may be, a calm survey of the field of conflict, and endeavour to answer without prejudice and without partiality Sir James Simpson's certainly momentous inquiry, "To what extent are hospitals, as at present constituted, banes or blessings? and [if the former] how can they be changed so as to convert them from the former to the latter?"

In attempting to answer this question, we shall chiefly confine ourselves to the function of hospitals specially animadverted upon by Sir James, namely, as places in which to have performed important surgical operations, and we shall use as a framework for our remarks the various "Propositions" which were advanced by the Edinburgh professor in his reply to Mr. Holmes, and which in the collected edition of his works are reprinted as chapters III. and IV. of the papers on "Hospitalism."

Sir James Simpson's first proposition is that "the aggregation or isolation of patients regulates, in a marked degree, the results of operations, etc., upon them." Now, if this be taken to mean simply that the overcrowding of patients exercises an unfavorable influence on the results of operations, probably all would agree that this proposition should be affirmed: it is a matter of universal experience that when a hospital or a ward is constantly forced to receive more patients than it has normally accommodation for, the health of its inmates will suffer, and the results of operations will probably be less favourable than when it is not crowded beyond its normal capacity. But this is not the sense in which Sir James Simpson meant his proposition to be taken: he maintained—and attempted to prove by statistics—that the size of a hospital was *per se* a determining cause of mortality, and that the death rate after amputation was directly proportionate to the number of patients harboured in the same building, no matter what its hygienic arrangements. Seven thousand cases of amputation which he had collected (two thousand from private country practice, as many from the records of metropolitan hospitals, and about three thousand from those of provincial hospitals), showed to his own satisfaction, though not to the satisfaction of those who differed from him, that the mortality after amputations in the continuity of the limbs was,

| | |
|---|---|
| "1. In hospitals from 300 beds to 600, . . . . . | 1 in $2\frac{1}{2}$ |
| 2. In hospitals from 100 beds to 300, . . . . . | 1 in 4 |
| 3. In hospitals from 25 beds to 100, . . . . . | 1 in $5\frac{1}{2}$ |
| 4. In cottage hospitals under 25 beds, . . . . . | 1 in 7 |
| 5. In isolated rooms in country practice, . . . . | 1 in 9." |

With regard to the mortality after amputation in large hospitals, it has been pointed out by Mr. Holmes, Mr. Callender, Mr. Birkett, and others, that the high death rate can be readily, and we may add most reasonably, accounted for in other ways than by attributing it merely to the size of the hospital, and with regard to the mortality "in isolated rooms in country practice" the criticisms of Messrs. Holmes and Callender, as to the true signification of Sir James Simpson's statistics, seem to us eminently just. The death rate of 1 in 9 (really 1 in 9.2), is derived from an analysis of 374 returns from private practitioners, these returns embracing in all 2098 cases. But, as pointed out by Mr. Callender, 217 of these returns (embracing 779 cases) do not include a single death; 62 of the operators having each amputated but once, 59 only twice, and the average number of operations performed by each of the 217 surgeons being but $3\frac{1}{2}$: as Sir James Simpson acknowledges, some of the blanks which he sent out were not returned at all, and it is, as remarked by Mr. Callender, altogether likely that some of these blanks may have come into the hands of operators whose experience had been as exceptionally unfortunate as that of the happy 217 had been fortunate. Mr. Holmes referring to the same point says:—

> "My conviction from reading Sir J. Simpson's figures is that his list is composed of returns from surgeons, who, having been gratified by their success in the emergencies of practice, have treasured up records of that success, and have been glad to communicate it. Nothing can be more natural, nothing more legitimate than this. If, like the surgeons marked No. 92 and No. 171[1] in Sir J. Simpson's list, I had amputated for injury 22 times; or like No. 191, 29 times; or like No. 288, 52 times, without losing a single patient, I should be most happy to take any proper opportunity to say as much, and more particularly if the question was asked; but if, on the contrary, I had (as I know many surgeons in the country have), had one or two unsuccessful cases of amputation in a long experience, chiefly occupied in other branches of practice, and in which death occurred from previous disease or concomitant injury, or operative disaster, or the want of proper attendance, why should I keep any record of facts which really prove nothing? or why should I make any return of them in a sanitary inquiry?"

To this criticism, Sir James replies that these four surgeons were less successful in their pathological amputations; that four other surgeons, whose returns are embraced in his tables, lost 25 out of 128 cases, or about one in five; and that in eight or nine of his returns (Mr. Callender gives the number as 12), the amputations are reported as "uniformly fatal." The last mentioned returns certainly speak well for the honesty of the reporters, but, we cannot help asking, is not this 8 or 9, or even 12, a beggarly corporal's guard in comparison with the noble company of 217, whose operations were "uniformly successful?"

---

[1] Return No. 171, as pointed out by Sir J. Simpson in his reply to Mr. Holmes, really gives 2 deaths to 22 amputations.

We confess that we are disposed, with Mr. Callender, to take the unknown number of Sir James Simpson's blanks, which were not returned at all, as in some degree a set-off to the returns which embraced only successful cases, and perhaps the fairest way of approximatively estimating, from the imperfect figures furnished, the true death rate of amputations in country practice, would be to reject the returns both of uniformly successful and of uniformly fatal cases; this would leave 145 returns, embracing 1305 amputations, with 212 deaths, and would give, therefore, a mortality of nearly one in six, or 16.25 per cent. These figures, as will be seen hereafter, do not so very much differ from those derived from the records of country or provincial hospitals, no matter what their size.

Passing on to Proposition II., in connection with which we will also consider Proposition XI., we are told (in the former) that the differences in the death rates of different classes of hospitals, and (in the latter) that the differences between the death rates after limb-amputation in country practice and in hospital practice are "surely not to be explained by differences either in the constitution of those operated upon, or in the nature of their injuries or diseases." This assertion is controverted, and we think most successfully, by Sir James Simpson's opponents, and indeed is contradicted by the experience of certainly the very large majority of practical surgeons. Taking the first branch of the proposition, we do not hesitate to say that "differences in the constitution of those operated upon" exercise a most important influence on the results of the operations performed. Nearly thirty years ago, Dr. Norman Chevers[1] undertook an "inquiry into the causes of death after injuries and surgical operations," and showed that on the condition of the internal viscera, and particularly of the liver, kidney, and spleen, depended in a great degree the probability of a successful or of an unsuccessful issue.

> "I have long been perfectly convinced," he says, "not only that the greater proportion of deaths after wounds, in our metropolitan hospitals, result from the effects of disease in these organs called into activity by the accidents which the patients have undergone, but also, that any operation or wound, however trifling, will be extremely liable to prove fatal in persons whose kidneys are in any degree suffering from acute congestion, or from any condition at all approaching to that state;—and although my data are less complete upon this point, I believe that the same observation will hold good with regard to those who are the subjects of active splenic or hepatic disease."

Persons thus affected, Dr. Chevers reminds his readers, may be "in the prime of life, and to all appearances of robust and vigorous constitutions," and yet die after comparatively slight accidents or trivial operations, the real cause of the fatal issue only being made apparent by a *post-mortem* examination. A similar view of the subject has been recently advocated by Mr. Birkett, in an able and well reasoned paper, of which a short abstract was published in the number of this Journal for July, 1870 (p. 202), and both agree that "the chances of death after operations appear to depend almost entirely upon the previous state of each patient's constitution."

---

[1] Guy's Hospital Reports, second series, vol. i., 1843.

Now, if it be granted (and we suppose no one will deny) that those who, in large towns, depend upon hospitals for surgical treatment—the sick poor—are less healthy and more apt to suffer from visceral disease (as the result of syphilis, intemperate habits, and many other causes) than the sick poor in small towns, in villages, and throughout the country; and if it be granted that large hospitals are, as a rule, found in large towns, and smaller hospitals, or none, elsewhere, our readers will, we think, agree with us that the differences in the death rates of amputations in different classes of hospitals, and in hospital as compared with country practice, *may* be explained by differences in the constitutions of those operated upon, and that such an explanation is at least as reasonable as that which would make the differences depend solely and simply upon the nature of the buildings in which the amputations are performed.

The second branch of the proposition under consideration, viz., that the difference in mortality is not to be explained by any difference in the nature of the injuries or diseases for which the patients are admitted, is of less importance, but we believe is also incorrect. We know of no injuries incident to civil life, which offer so unfavourable a prognosis as the severe compound fractures produced by the crushing of limbs under railway cars or heavily loaded wagons, and which are certainly proportionately commoner in large cities than in thinly populated districts. We believe also that amputations for cancer (the least successful of pathological amputations) will be found to be proportionately more frequent in large (metropolitan) hospitals than in either small (rural) hospitals or private country practice.

To estimate the mortality after amputation in country or provincial hospitals, Sir J. Simpson and Mr. Callender have each collected statistics, the former tabulating 3077 cases with 683 deaths (1 in 4.8), and the latter 2512 cases with 532 deaths (1 in 4.7); we confess that neither set of statistics seems to us to establish anything except (which is indeed pointed out by Mr. Callender) that the mortality is highest in those hospitals which derive their patients from the inhabitants of large though provincial towns, and least in those hospitals—no matter what their size—which are filled from the comparatively healthy populations of *bonâ-fide* rural districts.

Sir J. Simpson's third proposition is that "Limb amputations are more than three times as fatal in our large and metropolitan hospitals than [*sic*] the same operations are in private country and provincial practice." This startling proposition is founded upon the statement that 2098 country cases of amputation gave 226 deaths, or 1 in 9, while 2089 hospital cases gave 855 deaths, or 1 in 2½. We have already alluded to the doubtful accuracy of Sir J. Simpson's country statistics, and have given reasons for believing that 1 in 6 would be nearer the true death-rate than 1 in 9. On the other hand, 1 in 2½ we believe to be somewhat too large a mortality, even for British hospitals: we have published elsewhere a table of amputations derived from various sources, including 1492 cases from St. George's, St. Bartholomew's, Guy's, and University College Hospital. Adding to these, from Sir J. Simpson's pages, a more recent report from St. Bartholomew's (262 cases, 96 deaths), one from the London Hospital (224 cases, 106 deaths), and five from smaller hospitals also situated in London (153 cases, 70 deaths), we have a total from English metropolitan hospitals, large and small, of 2131 cases, with 678 deaths, or 1 in 3.1, or 31.8 per cent. If we add further the statistics from the Edinburgh and Glasgow Royal Infirmaries (in which the mortality would appear to be exceptionally heavy) we have 3163 cases with 1098 deaths, or 1 in 2.8, or 34.7 per cent. In French hospitals the mortality, as shown by Malgaigne's and Trélat's statistics, is considerably higher—nearly 1 in 2, or 49 per cent.; but, on the other hand, in the hospitals of Boston, New York, and Philadelphia, is much lower, being for amputations in continuity, according to Dr. Chadwick, the latest writer on the subject, but a little more than 1 in 4, or 27 per cent.

If these figures are correct, it will follow that limb amputations are not more than three times as fatal, but only about twice as fatal, in large and metropolitan hospitals as in private country practice: the difference is, no doubt, sufficiently startling, but not, we believe, more than can be accounted for by the different circumstances under which the operations are performed in the two cases, and certainly does not justify the conclusion that hospitals are in themselves necessarily prejudicial to the interests of humanity.

Sir J. Simpson's fourth proposition is that "In country practice increased experience in amputations gives a still higher ratio of success to the results of the operations." This may well be (on the "practice makes perfect" principle), but we cannot see that it has any particular bearing upon the questions at issue: it is, it seems to us, if an argument either way, one in favour of hospitals, as the operators in those institutions have certainly, as a rule, more experience in amputating than is possessed by private practitioners.

The fifth proposition we are also willing to affirm, viz., that there is greater success in amputating observed in country practice, not only in limb amputations taken all together, but in the separate amputations, as of the thigh, the leg, etc., taken separately.

Proposition VI. is that "the contrast between the amputations in country practice, as compared with hospital practice, is proportionally more marked and pronounced in the slighter than in the greater amputations of the limbs," and this leads us to notice a fallacy in Sir James Simpson's argument, which did not escape the quick eye of Mr. Callender, viz., that Sir James's country statistics contain a much larger proportion of amputations of the upper extremity than do his statistics of hospital practice.

Propositions VII. and VIII. may be considered together: "Amputations of the forearm," we are told, "are about twenty or thirty times more successful in country practice than in the practice of our large and metropolitan hospitals," and "the deaths after amputation of the forearm in hospitals result, in the main, from those pathological causes which are usually ascribed to morbific hospital influences"—or, in other words, from "hospitalism." Now, that the true death-rate after amputation of the forearm in country practice generally is but 1 in 189 (as is here asserted), we cannot believe; nor do we believe that the death-rate of the same operation in city hospitals is quite so high as one in six—in St. Bartholomew's Hospital it is, according to Mr. Callender, but 1 in 21; in the Pennsylvania Hospital it is about 1 in 11. And, we must add, if the mortality in hospitals is due not to the previous constitutional condition of the patients, but to the morbific influences of the hospitals themselves, it is hard to understand why those morbific influences should manifest their effects proportionately more among those who are slightly, than among those who are severely injured, and who would, therefore, one should suppose, fall more ready victims to "hospitalism's" attack. The true state of the case, however, is, we believe, simply this: that while amputation of the thigh or leg is, under any circumstances and in any locality, a severe operation, amputation of the forearm is, in a healthy countryman, a much more trivial affair than in a townsman of the class which fills our large hospitals, whether the amputation be done in a hospital or elsewhere.

Proposition IX., that double amputations are much more fatal in hospital, than in private country practice, does not, it seems to us, prove anything against hospitals; for the same causes which account for the difference of mortality after single amputations, will equally account for the difference in the case of double amputations, and a man who can ill support the loss of one leg, is of course still more likely to die when both are taken off.

Proposition X., that amputations upon septuagenarians are much less fatal in country than in hospital practice, may be acceded to; but the explanation, as justly suggested by Mr. Holmes, is, not that hospitals are to blame, but that, if the expression may be allowed, a countryman of 70 is, as regards vigor of constitution, commonly much younger than a townsman of the same age.

Proposition XI. has already been referred to in connection with Proposition II. Under this heading Sir. J. Simpson takes up categorically, and proceeds to answer, the various objections to his views upon Hospitalism, which have been advanced by Mr. Holmes. Most of these objections and answers have been already considered in the preceding pages, but there is one which seems to us to call for further comment: it is given here as Objection V. "'*I assert,' says Mr. Holmes, 'that such a comparison as Sir James Simpson has made between private and hospital practice must always be unfair, because the cases are selected on different principles in private practice' from what they are in hospital practice.* 'The fact' (he adds) '*must* be as I say,' for, to quote his own words, 'hospital surgeons refuse nothing in the way of operation which comes to their hands.' On the contrary," cries Sir James Simpson, "I feel and hope that, in the main, this argument is merely an illusion on Mr. Holmes's part. It would, indeed, be painful and revolting to most professional minds even to suppose that the poor, who form the patients in our rich hospitals, were cut and operated on by hospital surgeons on principles different from those on which patients were treated out of hospital." Dr. Brotherton, of Alloa, we are told, has also criticised Mr. Holmes's remarks upon this point.

Now, this is a plausible, sentimental kind of argument, which may commend itself to unprofessional minds, but which we confess we are surprised to find seriously advanced by such a man as Sir James Simpson. Every practical surgeon knows that, as a matter of fact, cases for amputation *are* differently selected in private and in hospital practice. In the latter, provided there is the slightest chance of saving life by an operation, the operation is recommended, and is usually readily acceded to by the patient or his friends; the reputation of the hospital, in an emergency, takes the place of a consultation of surgeons, and if the "head doctor" says an amputation is necessary, there is no one to gainsay it. In private practice there are many more formalities to be gone through with, and much clearer hopes of benefit from the proposed operation must, as a rule, be held out before it will be agreed to; this is particularly the case among the poorer classes, with whom an unjust suspicion often arises that the doctor wants to make a profitable job out of his patient's misfortune—a suspicion which cannot, of course, arise in hospital practice, for here no question of a pecuniary nature enters at all into the calculation.

But this difference in the modes of selecting cases does not, as Sir J. Simpson and Dr. Brotherton seem to think, result in any disadvantage to the patients in hospitals. No surgical statistician will need to be told that a careful selection of cases for operation is not necessarily synonymous with the preservation of a large number of lives. This may be briefly illustrated as follows: suppose each of two surgeons, A. and B., is, in the course of professional experience, called upon to take charge of 100 patients with limbs hopelessly injured or diseased, so that in every case the only hope for life consists in amputation. Fifty cases in each surgeon's practice present such favourable conditions as to age, the state of general health, etc., that every reasonable prospect is afforded of obtaining a successful result; in these cases each surgeon amputates, and of the fifty patients saves forty. In ten cases in each category, the general condition of the patient is so low that there is no hope of saving life by any mode of treatment; here both surgeons decline to operate, and their patients, as expected, die. There remain then forty cases in each category which are on the border line; the patients are, humanly speaking, certain to die if let alone, and will very probably die even in spite of an operation; A., believing in the merits of a "good selection" of cases, holds his hand, and his patients die in due time as he had anticipated; but B., careless of his statistics, gives his patients the benefit of a doubt, amputates, and of the forty saves half. Which has done best? A., according to Sir James Simpson, for he has lost but one in five after amputation; but while the death-rate after his *amputations*, has been but *one in five*, the mortality among his *patients* has been *three in five*, while though B. (who "cuts and operates" on different principles from those acted on by A.) has lost *one in four* after his amputations, the mortality among his patients has been but *two in five*.

Sir James Simpson's twelfth proposition is as follows: "The country amputations, though far more successful, ought to be more perilous and fatal than the hospital amputations, inasmuch as they contain a marked excess of amputations for injury; which traumatic amputations are more dangerous than amputations for disease." Upon this proposition we have to remark that Sir James Simpson's statistics are radically defective in that they confound together *secondary* amputations and those for *disease:* the latter are indeed (as he tells us) less dangerous than *primary* traumatic amputations, but *secondary* traumatic amputations are, as we have elsewhere shown, much more dangerous than either, as well in civil as in military practice.

Proposition XIII. is that "The state of the patients at the time of operating in these (traumatic) amputations, is precisely the same in country practice and in hospital practice." This proposition is, we think, sufficiently answered by the considerations adduced in our remarks upon Propositions II. and XI. The patients, indeed, in both country and hospital practice, may be "in the condition of ordinary or normal health a few hours, or a very short time at least," before submitting to amputation, but the "ordinary or normal health" of a hardy peasant is, we insist, quite different from the "ordinary or normal health" of one whose home is a cellar or tenement-house in a large city.

Proposition XIV. is as follows: "Primary amputations are chiefly for the worst forms of compound fractures of the limbs; and the hospital surgeon of necessity sometimes operates in a less severe form of these injuries than the country surgeon, and hence ought to be more successful, but is not." This seems to us an unfair statement of the case; if the hospital surgeon sometimes amputates for less severe injuries than his country brother, it is because he has to deal with worse material, and because a given lesion is, as regards the chances of recovery, a positively worse injury in the one case than in the other. Moreover, we are disposed to believe, as has been already mentioned, that the worst cases of compound fracture are met with in greater proportionate frequency in hospital than in country practice.

As Proposition XV., Sir James Simpson declares that "In consequence of the relative severity of the cases of injury treated by amputation in the country, more die of simple shock in country practice than in large hospital practice." Of the deaths after amputation in the country cases collected by Sir James, thirty-six per cent. are said to have been from shock, while of 41 fatal cases which occurred in St. George's Hospital, but two, or five per cent., were attributed to the same cause. Hence, according to Sir J. Simpson, the country cases must have been the most severe. There are, it seems to us, several fallacies in this argument: (1.) Knowing, as we do, the very loose manner in which the word shock is used by many surgeons, and even by not a few surgical writers, we have no assurance that a large number of the deaths after amputation reported by Sir J. Simpson's country correspondents, were not in reality due to other causes—as for instance, to hemorrhage before, or perhaps even during, the operation; (2.) If the proportion of deaths from shock in country practice, and in that of St. George's Hospital, is accurately stated, it may be that the difference is due to the superior skill and judgment of St. George's surgeons in preventing death from shock, by adopting suitable treatment, and by choosing the proper stage of reaction for operative interference—the patients, though saved from immediate death, perishing at a later period from exhaustion, visceral disease, or pyæmia; (3.) Every practical surgeon knows that an extreme degree of shock sometimes accompanies a comparatively slight lesion, and hence that a large proportion of deaths from shock, in a given number of cases of injury, is by no means necessarily a proof that the injuries have been unusually severe.

Proposition XVI. is, that "Amputations of the thigh for disease are more common in infirmary than in country practice, but are three times more dangerous in hospital than in rural practice." Sir J. Simpson's statistics upon this point are, as we have already shown, defective, in that they confuse together amputations for disease and secondary amputations for injury. The mortality after thigh amputations for disease in hospitals, is, we believe, not nearly so high as is here represented, viz., thirty-seven per cent.; it is in British hospitals, according to the published reports of Guy's, St. Bartholomew's, and St. George's, but about twenty-five per cent., and in American hospitals, according to Dr. Chadwick's statistics, only twenty-two per cent.

To Proposition XVII., that "The causes of death after limb-amputations differ in some important points in large hospitals, and in private country practice," we are quite willing to agree; but we cannot see that this proposition proves anything one way or the other. According to Sir J. Simpson's statistics, in country amputations, the deaths from *shock* are thirty-six per cent., and those from *pyæmia* less than five per cent. of the whole number, while in hospital amputations, the deaths from *shock* are but five per cent., and those from *pyæmia* between forty and fifty per cent.[1] of the whole number. But, as was long ago shown by Dr. Chevers, and as every practical surgeon knows, among the predisposing causes of pyæmia, none occupies a more important place than pre-existing visceral disease—disease not incompatible with an appearance of great health and vigour; and hence it need cause no surprise to find that deaths from pyæmia after amputation, are more common in city hospitals than in private country rooms, for, as we have already pointed out, latent visceral disease is more common among the poor of large towns than among dwellers in rural districts. Besides, as we had occasion to remark in considering Proposition XV., it is not impossible that a good many of the patients who in country practice died from shock within a few hours of the time of amputation, might, had they been received and promptly treated in a well-ordered hospital, have been tided over the first few critical days, and yet, dying at a later period, have come to swell the list of those who in hospital practice perish from pyæmia.

Proposition XVIII. is, that "The causes of death which Mr. Holmes points out as the reasons for the greater mortality of amputations in the Parisian as compared with the London hospitals, are the same causes that produce the greater mortality of amputations in our large British hospitals as compared with country practice." This proposition is, in one sense, no doubt true, but as applied by Sir James Simpson it seems to us to contain a palpable fallacy. The excessive mortality in Paris hospitals appears to be due to the great prevalence therein of erysipelas, pyæmia, etc., and to the same diseases is due, as we have seen, a large proportion of the deaths in hospital practice both in England, and we may add, in this country; but it is not proved, we insist, that the sole cause of the prevalence of these affections in either French, British, or American hospitals, is their defective hygienic arrangements; on the contrary, we believe that in each case the constitutional condition of the patients before entering hospital exercises a most important influence in predisposing them to the development of erysipelas and pyæmia, though it is highly probable that, as remarked by Mr. Holmes, the defective hygienic arrangements which are known to prevail in many of the French hospitals, may be likewise influential in this respect. In fact, as pointed out by Dr. Guy and Sir. J. R. Martin, there is reason to believe that the great mortality in Paris hospitals is due to a combination of these causes, the Parisian being, in the first place, "a worse subject for hospital treatment than the inhabitant of London," and, from the different systems on which hospital relief is conducted in the two cities, the Parisian hospitals, being "subject to be greatly overcrowded in unhealthy years and seasons," while the London hospitals "receive a number of patients, determined not by the wants of the population, but by their own resources."

Proposition XIX., that "Surgical patients in surgical wards seem sometimes to have pyæmia or surgical fever induced by the accidental inoculation of the morbific secretions formed in the bodies of other patients previously affected," is advanced as having been suggested some years ago by

---

[1] Sir J. Simpson, using a partial return from St. George's Hospital, gives 58.5 per cent., but Mr. Holmes's report of 300 cases gives only 50 per cent., while Mr. Bryant's (from Guy's Hospital) gives only 42 per cent. Dr. Chadwick's statistics (Mass. Gen. Hospital) give only 23 per cent.

Sir James Simpson, but is not supported by either evidence or argument; that pyæmia may occasionally originate in such inoculation we do not doubt, but such an occurrence is at least very rare, and in order for pyæmia to be developed under such circumstances, not only must there be an inoculation of "morbific secretions," but there must be, also, a state of system, in the recipient, predisposed to pyæmic infection.

Proposition XX. "The air breathed by patients aggregated in surgical wards becomes sometimes morbific and dangerous by its containing various inorganic and organic materials, and by the inmates mutually vitiating it more or less by the exhalations and excretions from their wounded, ulcerating, and sick bodies." That this is true of ill constructed and ill managed hospitals, we shall not of course deny, but it is surely not true of well constructed and well managed hospitals, and the faults of the bad are not to be adduced as an argument in favor of destroying the good. We are willing to go any lengths with Sir James Simpson in improving, whenever necessary, the hygenic conditions of hospital wards; but we cannot see that a hospital ward as such need necessarily be hygienically inferior to other apartments which sick and wounded men inhabit.

Sir James Simpson's twenty-first and last proposition is that "The residence in hospital wards of men in a state of relative bodily health is attended with a loss of life markedly greater than when the same class of men are not thus hospitalized, but allowed to reside in private cottages and dwellings." Granting this to be true—though we do not think it is proved by Sir J. Simpson's statistics of the death-rate among chronic lunatics in Scotland—we might advance as a similar and universally acknowledged proposition, the following: The residence in large cities of men in a state of relative bodily health is attended with a loss of life markedly greater than when men of the same class are not thus citizenized, but allowed to reside in country houses and villages. What then? Are we to give up living in cities? Are we to declare that because the death-rate is higher in cities than in the country, therefore cities, as at present constituted, are banes rather than blessings to society?

If the considerations which we have advanced are reasonable, and if our exceptions to Sir James Simpson's arguments have been well taken, our readers will, we think, agree with us that the distinguished Edinburgh professor's wholesale indictment of hospitals is not sustained by the evidence. And, after all, no practical end can, in our judgment, be attained by instituting a comparison between cases in private country practice and those in city hospitals. No one has, so far as we know, ever suggested that large city hospitals should be erected in thinly populated rural districts, and that men severely injured should be dragged scores of miles over rough country roads in order to submit to amputation within hospital walls; but for the surgical treatment of those for whose use hospitals are designed—the sick poor of large towns—hospitals are, we maintain (and in this opinion every one who has any experience of surgical practice in the courts and alleys of a city will coincide), not at all a bane, but in every sense of the word a blessing.

That hospitals, as at present constituted, are perfect, no one will pretend; on the contrary, all hospital surgeons are agreed that no effort should be spared, whether in the construction of new wards or in the repair and alteration of old ones, to attain and maintain the highest possible degree of sanitary excellence, by the adoption of all means which may be proved by the study of hygiene to be appropriate to this end.

To discuss fully the precise mode or modes in which the sanitary condition of our present hospitals may be most readily brought to, and kept at, the high standard indicated, would require more space than can be afforded by the limits of this review. Sir James Simpson's original suggestion that the hospitals themselves should be torn down and substituted by "wooden, or brick, or iron villages" may probably be set aside as simply impracticable; even were there space in large cities in which to erect such villages, their proper *administration* (in the technical sense of the word), would be an impossibility. Whether the sought-for panacea is to be found in knocking out the wall on one side of every staircase and corridor; in doing away with corridors altogether and building outside staircases to all the upper wards (both of these plans are suggested by Sir James); in douching all our wounded patients with the spray of carbolic acid and otherwise adopting the minutiæ of what is known as the "antiseptic method;" or in burying our wounded beneath the soil of mother earth, and erecting over them a cerulean canopy of blue paper; whether in any of these plans is to be found a sovereign remedy for the evils of hospitals, and a sure prophylactic against "hospitalism," may be doubted. The subject is too extensive to be entered upon at present, but may perhaps form matter for further discourse upon some future occasion.

J. A., JR.

---

ART. XVII.—*Lehrbuch der Pathologischen Gewebelehre zur Einführung in das Studium der Pathologischen Anatomie, verfasst* von Dr. EDUARD RINDFLEISCH, Professor der Pathologischen Anatomie in Bonn. Zweite Auflage. 8vo. pp. 633. Leipzig, 1871.

*A Text-book of Pathological Histology. An Introduction to the Study of Pathological Anatomy.* By Dr. EDWARD RINDFLEISCH, Professor of Pathological Anatomy in Bonn. Translated from the second German edition, with the permission of the author, by W. C. KLOMAN, M.D., assisted by F. C. MILES, M.D., Professor of Anatomy, University of Maryland. 8vo. pp. 695. Philadelphia: Lindsay & Blakiston, 1872.

PATHOLOGICAL ANATOMY is one of the youngest branches of medicine, and may be fairly regarded as having had its starting-point in the work of Morgagni (1761), "On the Seat and Causes of Disease as traced out by Dissection." In the century which has since passed, pathology has made great advances, and this is more markedly the case since microscopic investigation has furnished a more accurate basis for the classification of diseased structures, and has caused pathological histology to assume in relation to morbid anatomy a position much more important than that held by normal histology to anatomy. Its province, as defined by our author in his preface, is to show how such gross changes in organs as enlargements, diminutions, indurations, softenings, discolorations, etc., have their origin in certain changes of their structural elements, and to explain the former by the latter.

The great strides made by science in Germany during the last twenty years, is nowhere more manifest than in this department; and the patient and unwearied investigations, and the beautiful and elaborate monographs published at various times by Virchow, Recklinghausen, Cohnheim, Stricker, Thiersch, Waldeyer, Köster, and others, may well put other countries to the blush when we compare with them the work done, during the same period, either in Europe or in this country. In fact the additions to our knowledge in this direction have of late been so rapid that in this, the second edition of his book, Prof. Rindfleisch has been obliged entirely to rewrite that portion of it devoted to morbid growths. The book differs agreeably from many text-books in being not simply the work of a compiler and bookworm; every chapter bears the stamp of the author's individuality and laborious investigations—here testing the observations of others, there adding some contribution of his own. In a word, as he informs us in his preface, and as the numerous original wood-cuts amply testify, the work has been written rather at the microscope than in the study.

In a few crisp words of "Introduction," Rindfleisch brings us, with almost painful distinctness, face to face with the limits of our histological knowledge, by showing how, when we observe the cells of any living tissue, even with the best optical instruments, we are unable, so long as they are in a state of health, to trace any changes whatever in their appearance; so long as the cell is in a state of formative equilibrium—its accumulation being exactly sufficient to balance its waste—so long it presents to us the same appearance, and we infer nutritive changes only because while certain materials are continually taken up into the system, others are constantly cast out, which prove to be "metamorphic products of vitalized substances."

Any changes which we perceive have two principal directions—formation and degeneration; and in most morbid processes we find these side by side.

It is impossible to criticize justly in the brief space at our disposal a book which is written in so fair and impartial a spirit, and which is, in itself, an epitome of the present state of pathology. The reviewer will, therefore, confine himself to a mention of some of the more noteworthy portions of it, in the hope that every one really interested in pathology will provide himself with a copy, and read it at his leisure.

The book is divided into two parts, general and special.

The first treats of the Decomposition and Degeneration of Tissues and of Pathological New Formation.

The second of Anomalies: I. Of the blood and the places of its formation. II. Of the circulating apparatus. III. Of the serous membranes. IV. Of the skin. V. Of the mucous membranes. VI. Of the lungs. VII. Of the liver. VIII. Of the kidneys. IX. Of the ovaries. X. Of the testicles. XI. Of the breasts. XII. Of the prostate. XIII. Of the salivary glands. XIV. Of the thyroid. XV. Of the suprarenal capsules. XVI. Of the bones. XVII. Of the nervous system. XVIII. Of the muscles.

The first part opens with an account of the decomposition and degeneration of tissues, and takes up the study of necrosis. It shows how, after either general or local death, our tissues fall a prey to the large quantity of water (81 per cent.) contained in them; the albuminates and their derivates are washed out of their containing cells. The blood rapidly changes; its colouring matters leave the corpuscles, and are imbibed by all surrounding tissues, causing the well-known cadaveric discolorations (staining); the red discs become colourless, change their form, and finally disappear. All nucleated cells change rapidly, the protoplasm coagulates and becomes cloudy, and both nucleus and cell break up into relatively large granules, which finally become cloudy and disappear. We are most familiar with this phenomenon in the death of the striated muscles, the so-called rigor mortis. Here, as Kühne and others have shown, the stiffness depends on the separation of a solid albuminous substance (myosin) from the muscular juices, thus forming a whitish but little transparent mass, which causes a marked opalescence, contrasting with the brownish discoloration of other portions. This, however, is but the first step towards death of the muscle, as is instanced by its artificial production in a frog's thigh, when we ligature the supplying artery, but which disappears if the blood supply be restored. If, however, it persist long, the muscle loses its colour and consistence, the transverse striæ and nuclei disappear, numerous dark points, fat globules and pigment granules are seen, the disks disintegrate, and finally, also, the sarcolemma giving way sets free a granular detritus. In some forms of gangrene, however, the muscle breaks up into the Bowman's discs. The non-striated muscular fibres present somewhat similar appearances, as is seen in the so-called softening of the stomach, which was formerly considered as a sign of disease, but is now known to be only a post-mortem change. Bone, as is well known, remains in the necrotic process relatively unchanged; but the fact that sequestra are of less specific gravity than the normal dried bone,. shows that it has not only lost its marrow and bloodvessels, but that also a considerable portion of the organic matrix of the bone cartilage is lost by putrefaction. The chemical changes which ensue are manifold, but present us with a number of interesting forms; thus gangrene of the lungs, liver, spleen, etc., often presents us the opaline concentric rounded forms of leucine. Tyrosin shows itself in fine, satiny white needles; margarin in the well-known crystallizations in the fat vesicles, and also in the free oil globules. Occasionally, in alkaline or neutral putrid fluids, we see the coffin-lid-like crystals of the ammonio-magnesian phosphate, further pigment granules and vibriones. The latter our author ranks among the vegetable parasites, and asserts, with Frau Johanna Lüders, that these minute masses of protoplasm escape from the spores of various fungi.

The next section treats of those forms of retrograde metamorphoses which our author calls conditions of involution, viz.: Fatty degeneration, cloudy swelling, mucoid softening, and colloid degeneration. In the first named process we have numerous minute fatty molecules making their appearance in all parts of the cell, within the nucleus and protoplasm; as these become more numerous the cell becomes more spherical in shape, and assumes the appearance of a granular corpuscle. We have the prototype of this process in the formation of milk; here the yellowish granular corpuscles are called colostrum corpuscles, and have their origin in the fatty degeneration of the epithelial gland cells; and in ordinary milk the white appearance is due to the further breaking up of these corpuscles into their component globules. We see the same process in the degeneration of the epithelial cells of soft cancers, where we so frequently, by scraping the cut surface of the tumour with a scalpel, obtain an abundance of a cream-like cancer-juice.

The so-called cheesy degeneration is another form of fatty degeneration, and occurs in those tissues most readily where, either from their position in the body, or from their naturally small supply of blood, there is not present fluid enough to allow of the breaking up and floating off of the fatty molecules and cell detritus. The cells desiccate and shrivel into small angular shapes, and finally we have a yellowish-white friable smeary mass, which was formerly believed to form an essential part of tuberculosis, and was called "crude tubercle."

We must steadily keep in mind that fatty degeneration is something entirely distinct from fatty infiltration; here the fat does not come from without, but is a visible liberation of the fat formerly incorporated in the cell protoplasm. A muscle, therefore, in a state of fatty degeneration, yields no higher percentage of fat than a healthy one. It is simply a rearrangement of the constituents of the cell, and as in all young cells where active growth is going on (*e. g.* in the cells of the yolk in the fecundated ovum) a considerable number of fat molecules are seen in the albuminous protoplasm of the cells—fat which entirely disappears in the formed tissue; so here, in its retrograde metamorphosis, we see it once more given up and becoming visible.

In both mucoid and colloid degenerations we have a diaphanous, trembling, jelly-like substance, penetrated by net-like fibres, which consist in the first case of stellated anastomosing cells; in the second, of the remains of the fibrillar intercellular substance. The first contains mucin, and is, in all respects, constituted like the fœtal subcutaneous connective tissue, and the Whartonian jelly of the umbilical cord. The second contains a substance not precipitated, like mucin, by acetic acid, and the microscope shows the presence of a highly refracting, fat-like body, the so-called colloid globule in the cells of the part.

The interferences with nutrition caused respectively by the amyloid, calcareous, pigmentary and fatty infiltrations are next considered. When we examine a portion of amyloid infiltrated tissue, we find that the cells look swollen, that their sharp angles and edges have been rounded, and that they have a homogeneous, translucent, and slightly opaline appearance. In the spleen, kidney, liver, and other organs usually affected by this change, we invariably find that its first traces are to be seen in the smaller arteries and capillary vessels. In the arteries the infiltration first attacks the inner, then the middle coat, and finally the adventitia and the adjacent tissue. This diminution of the calibre of the vessels causes the anæmic state of such tissues, while the infiltration of the cells produces the well-known grayish translucent appearance. The infiltrated tissue loses its elasticity, becomes doughy, and pits on pressure. As is well known, the addition of iodine causes the infiltrated parts to turn mahogany-red, and thus furnishes a valuable test for the slighter degrees of the affection. In treating of calcification, our author defends the view that the solubility of the lime-salts in the blood and tissues is due to an excess of carbonic acid, and careful observation shows that the first deposits of these salts, both in physiological and pathological processes, occur at the extreme boundaries of some given vascular zone. The lime is there deposited because its solvent, the free carbonic acid, has, by its greater capacity for diffusion, left the stagnating blood and been excreted in other ways, leaving the insoluble lime-salts behind.

True, pigmentation (not owing to some dyscrasia) is usually associated with some local hyperæmia or extravasation of blood, and is due to the escaped and degenerated hæmoglobin. This changes into hæmatoidin, which is often met with in its crystalline form, but afterwards breaks down into dark brown, or black granules, which are taken up by the protoplasm of cells, leaving their nuclei free, and thus reversing the action of many of our staining solutions, *e. g.* carmine. The pigment infiltration does not seem materially to diminish the functional capacity of the cell. Thus we all know the facility that the cells of the choroid and those of the negro's skin have for keeping themselves supplied from the colouring matter of the blood, and the pigmented sarcomas exhibit no diminution of their malignancy, even when thoroughly infiltrated with black or brown pigment.

The fatty infiltration is so familiar to all, as it occurs in the liver and subcutaneous cellular tissue, that a detailed description of it is superfluous. It distinguishes itself from fatty degeneration in the fact that although both commence as small globules in the interior of the cell protoplasm, in fatty infiltration these coalesce into large drops, and force the nucleus to one side, while in fatty metamorphosis, although they may steadily increase, they never become confluent.

*Pathological New Formation.*—After a few general remarks on cell structure, origin, and growth, and a series of definitions of the terms he subsequently uses in the work, our author gives an interesting section on "normal growth as a type of pathological," and commences the consideration of pathological new growths by taking up the subject of inflammation. Realizing that the whole theory of inflammation has recently undergone a revolution, and that it is really one of the most knotty and difficult, as well as one of the most important subjects in pathology, our author is very circumspect and guarded in the opinions which he enunciates regarding it. While accepting, without reservation, the discoveries of Cohnheim, so far as relates to the migration of the white corpuscles out of the vessels, he hesitates to accept them as the only source of new growth, quoting the investigations of Stricker to prove that the cells of inflamed tissue themselves undergo changes in inflammation "which can only be interpreted in the sense of progressive metamorphosis," and also, the further observation of Stricker, that the wandering cells in inflammatory depots multiply by fission. Moreover, in his chapter on the inflammation of mucous membranes, he refers to the observations of Remak and Buhl, confirmed by his own experience, which prove that in such inflammations there is frequently an endogenous formation of cells by the cells of their lining epithelium. In treating of the healing of wounds by granulation, he shows that the wound does not skin over by outgrowth of the neighbouring epithelium, but that, influenced by a certain epithelial infection, the cells nearest the remaining epithelium gradually take on an epithelial character, and adds: "If we seek for an analogue of this epithelial formation, we can only compare it to that primal separation of the embryonal germinal tissue into epithelial and non-epithelial layers, and regard it as a genuine embryonal differentiation."

Under the head of Specific Inflammation, Rindfleisch treats of those new growths which are classified by Virchow in his work on "Morbid Tumours" as granulation and lymphatic tumours.

These are to be distinguished from ordinary inflammation in that, in place of or in addition to the ordinary plastic exudation, they yield certain products, which are characterized by special anatomical peculiarities. The latter are typical for each individual process, and are in general traceable to the particular quality of the inflammatory irritant. As such, in every case, a specific virus is active, which either passes into the organism by hereditary transmission, or is acquired by contagion, or finally primarily formed in the organism. Under this head syphilis, lepra, glanders, typhus, and tubercle, are specially treated of.

Constitutional syphilis gives a tendency to active hyperæmia and inflammatory new formations. The so-called gumma syphiliticum is due to the formation of a circumscribed globular swelling within a larger depot of germinal tissue. The so-formed node differentiates itself by marked metamorphosis, and while the bulk of the germinal tissue goes into the formation of a dense cicatrix with unusual retractile power, the cells within the gumma retain a rounded form, and by their anastomoses form a cellular net, the basis substance undergoing a mucoid degeneration. The cells themselves undergo fatty degeneration, and thus become transformed to rounded aggregations of fat granules. Thus is formed the characteristic gummy tumour—an elastic yellowish-white rounded mass, imbedded in a depot of newly-formed connective tissue.

*Typhus.*—We have the acme of typhus changes in the well-known changes of the Peyer's patches in enteric fever. The cells differ from those of ordinary acute inflammation in that they have a more epithelial appearance, and while, in the ordinary lymph corpuscle, the protoplasm scarcely equals the space occupied by the nucleus, in the "typhus cell" the protoplasm occupies usually more space than the nucleus, thus approaching a low grade of epithelial development.

*Tubercle* —The modern definition of tubercle excludes all that cheesy degeneration which was formerly tubercle *par excellence.* We now restrict the term to the grayish, translucent, compact and miliary nodules which are so frequently associated with the cheesy inflammation. According to Villemin, Klebs and Cohnheim, the introduction of this cheesy detritus into an individual results in the occurrence of "miliary tuberculosis," whether this result be obtained by inoculation or the formation of the cheesy detritus within the individual himself. If we tease to pieces, with fine needles, one of the miliary granules, we obtain large cells of a rounded angular form, consisting of a finely granulated, highly refracting substance. These have a moderate sized, usually eccentrically situated nucleus, shining and darkly contoured—sometimes single and sometimes multiple. We encounter also smaller cells, in every way similar to the nuclei of the larger ones, which have probably been formed by endogenous development. These are all imbedded in a finely fibrous network. Experience proves that such tubercles arise usually in the outer coat of the small arteries and transition vessels. "They are placed as lateral projections, single or united in small groups upon the larger branches, while upon the more minute branches and the 'almost capillary vessels' they present themselves as spindle-shaped varicosities, which occupy the whole circumference of the vessel." This is often admirably seen in the small cerebal vessels where His has demonstrated that the tubercles arise from the endothelia of the lymph vessels which here surround and form a sheath for the bloodvessels. The presence of a bloodvessel is, however, not a necessary condition for their origin; they may arise anywhere where we find an endothelium—from the endothelia of serous membranes, of lymph vessels, of bloodvessels—in short, wherever endothelial cells are subject to a specific irritation.

*Histoid Tumours*, according to our author, include the sarcomata, and the cavernous, fatty, cartilaginous, mucoid, bony, muscular, and nerve tumours, and are distinguished by the interior continuity of their elementary parts. "The majority of them consist only of one tissue; when, however, more tissues participate in their composition, they are never found in a differential apposition with sharply drawn limits, as epithelium and connective tissue, but pass organically into each other." They all have for their starting-point embryonal connective tissue. This group includes tumours which are clinically of the most dissimilar nature—some types of benign growths, *e. g.* lipomata, others of malignant ones, *e. g.* the small round-celled sarcomata. Where such new formations grow only by a continuous proliferation of their own cells, they often after they have attained a certain degree of development are enveloped by a fibrous capsule which completely separates them from the surrounding tissues, and we constantly meet fatty, cartilaginous, and fibrous tumours thus isolated. Where the growth is a peripheral one, the tumour increasing constantly at the expense of the surrounding connective tissue, as in the sarcomata, we have to deal with a much more aggressive and dangerous form of nutritive disturbance.

The sarcomata present types of tissue such as are constantly met with in inflammatory hyperplasia, viz., the round-celled formative tissue of granulations, the spindle-cell tissue, and the compact fibrous tissue of cicatrices, and we accordingly distinguish in them three principal branches, namely, the round-celled sarcoma, the spindle-celled sarcoma, and the fibroma. Some varieties of sarcoma are among the most malignant tumors with which we are acquainted, and Rindfleisch here enters into a discussion as to the malignity of new formations and sums up the arguments of those who believe that the development of every malignant tumour is preceded by a constitutional dyscrasia as well as of those who advocate a primary local origin, and is evidently inclined to range himself with the latter party, although he is not disposed "to anticipate in any way the coming decision of this question." As a general rule it may be stated that those growths are the most malignant which take their origin in tissue where there is a large vascular supply, and that those varieties which contain many small, young, mobile cells, recur more frequently and more promptly than those containing spindle-shaped or myeloid cells.

*Carcinomata.*—The term cancer, which was formerly applied to all malignant growths, is now restricted to those which are essentially epithelial in their type. They consist of an alveolar fibrous stroma in which are packed cells of an epithelial type without any intra-cellular substance. "By far the greater number of carcinomas proceed primarily from the epithelial clad surfaces of the body, from the skin and mucous membrane, or from the secreting glands. They depend upon an abnormal growth of epithelial tissue We have, therefore, a variety of processes from simple hypertrophy of a gland to well-marked cancer, and modern pathologists have invented the term adenoma to designate a form of tumour which stands between the two.

The greatest diversity of opinion reigns as to the manner in which normal epithelium is reproduced and grows, and the question is even more hotly contested as regards the pathological formations of an epithelial type. Thirsch, Waldeyer, Köster, and others have recently published able monographs on the subject, but much remains yet to be accomplished.

Rindfleisch divides the carcinomas into I. Glandular cancer; II. Epithelial cancer (epithelioma). The first may be either hard (scirrhous) or soft (medullary), according to the greater or less abundance of the connective tissue stroma, and according to greater or less size of the contained alveoli, and in certain situations (*e. g.* stomach, large intestine, liver, etc.) we sometimes find the cells undergoing the colloid degeneration. In the glandular variety we are told "that the new formation has its starting-point in the glandular epithelium has of late been established by numerous investigations." The cells multiply by division. First of all, probably, the lumen of the tubuli and acini fills up and in their place we have solid cell groups, which, however, immediately push out outgrowths in all directions, and by means of these penetrate into the surrounding connective tissue. Under the head of epithelial cancer our author recapitulates the results of some of the more recent investigations on the subject and says, "According to Thirsch, Billroth, and others, the epithelial shoots grow exclusively by the division of the epithelial cells contained in them ; according to Köster, the growth is by apposition and ensues by a corresponding metamorphosis of the endothelia of the lymph-vessels in whose cavities the epithelial projections exclusively extend themselves and advance. I for my part can neither overlook the very evident fact that lively nuclear and cellular divisions take place in the epithelial shoots, nor ignore the speaking pictures which we obtain if we, according to Köster's direction, cut parallel to the surface and examine the indurated edge of certain flat epithelial cancers of the cutis."

In the second or special part of the work, Rindfleisch takes up in succession the various subjects whose headings have been enumerated in the first pages of this notice. In the chapter on the blood, we have an able description of the minute structure of thrombi ; of the methods in which they originate in the vessels and subsequently soften or become organized, and also of the embolic processes.

In the chapter on serous membranes our author states, that these structures are not organs, but part of that system of clefts or fissures in the body, which, since the investigations of Recklinghausen, have been universally regarded as forming a part of the lymphatic system. The epithelium covering their surface consists of thin transparent polygonal scales, and attached to it on the under side a nucleus with barely enough protoplasm to hold it in position. He maintains that in inflammation these cells proliferate and subdivide, and that from them the primary heteroplastic growths (sarcoma, tubercle, cancer) in these membranes originate.

At the commencement of the chapter on the anomalies of the mucous membranes, our author recapitulates in a few words their peculiarities of structure and function and calling attention to the thinning of the epithelial layer by the loss of its horny stratum as we pass at any of the orifices of the body from skin to mucous membrane, thus continues, "No doubt can reasonably exist as to the significance of this decrease of the thickness of the epithelium in the anterooms (atria) of the digestive tract. It is the first step towards facilitating the osmotic interchange between the fluids and gases in the lumen of the tract upon the one side and the blood upon the other. Where this exchange, as resorption or secretion, becomes more active, where it forms the foundation of the entire nutrition, the last layer of pavement epithelium also disappears and the cylindrical cells alone remain. Thus the intestinal canal from the cardia to the anus, thus the respiratory passages, thus the female sexual organs from the external orifice of the uterus, are all clothed with a cylindrical epithelium." "The greater part of all the diseased conditions of man are either catarrhs of mucous membranes or are complicated with them." Then follows a full discussion of catarrh, and he divides all other inflammations of mucous membranes into croupous and diphtheritic. In the former we have a fibrinous exudation on the surface, which, when removed, shows the mucous membrane remaining intact; in the latter the exudation takes place in the substance of the tissue itself, and the apparent false membrane is really a slough of the whole thickness of the membrane, leaving a raw surface beneath. In pneumonia we have a type of the first; in dysentery of the second. It will be seen at a glance, that according to this definition, diphtheritis is something very different from what is usually understood in clinical treatises as diphtheritic inflammation in the throat and chest.

We hope that the foregoing *résumé* and extracts will have been sufficient to give the reader a fair idea of the book, and that it may have interested him sufficiently to induce him to carefully study it. In conclusion, we cordially recommend it as the best treatise on the subject; a treatise which, if studied in conjunction with either Förster's *Handbook of Pathological Anatomy* or Klebs's work of the same title, cannot fail to give the reader a clear and comprehensive insight into pathology.

As regards the American translation we have only to add, that while it does credit to the gentlemen whose names stand upon its title-page as a most conscientious rendering of the original, it is disfigured by arrant "Germanisms" at almost every page, and we hope that should another edition be called for they will exert themselves to render it into more vigorous and idiomatic English. W. F. N.

# ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

Art. XVIII.—*Guy's Hospital Reports.* Edited by C. Hilton Fagge, M.D., and Arthur E. Durham. Third series. Vol. XVII. 8vo. pp. xviii., 536. London: J. & A. Churchill, 1872.

The present volume of this unequalled series of Hospital Reports contains fifteen papers, which, in accordance with the custom of previous years, we shall notice in succession, so that those of our readers who have not access to the book itself may yet become acquainted with its contents, which are of considerable variety and of great practical value. Grouping together, first, those papers which are particularly interesting to surgeons, we shall begin by inviting attention to Art. I., which consists of a third instalment of Mr. Poland's elaborate *Statistical Report on the Treatment of Subclavian Aneurism.*

The modes of treating subclavian aneurism which are considered in this part of Mr. Poland's essay are, (1) Ligation of the first portion of the subclavian artery; (2) Simultaneous ligation of the first portion of the subclavian and of the common carotid artery, and of both these vessels with the vertebral artery; (3) ligation of the innominate artery; and (4) simultaneous ligation of the innominate and carotid—this mode of treatment being illustrated by but a single case (that of Dr. Smyth, of New Orleans), in which the vertebral artery was subsequently tied for secondary hemorrhage. The details of this now famous case, which Mr. Poland calls "the only one on record of recovery after an operation for the cure of subclavian aneurism," are familiar to our readers from having been published in the *Domestic Summary* of the number of this Journal for July, 1866, pp. 280 *et seq.* Ligation of the first portion of the subclavian artery, whether by itself, or in connection with the simultaneous ligation of other vessels, has invariably proved fatal when performed as a Hunterian operation, as of course it must be in the case of subclavian aneurism. We are interested, however, to observe that, as a *distal* operation, it would appear that ligation of the first part of the subclavian might be successful: this is shown by a case here quoted from the record of Hobart, an Irish surgeon, in which the first portion of the subclavian and the carotid were simultaneously tied for an aneurism supposed to be of the innominate (though afterwards found to be aortic), and in which the subclavian ligature came away safely on the fourteenth day, though fatal hemorrhage from the carotid occurred at a subsequent period. After death "it was found that *perfect union had taken place where the ligature had been applied on the subclavian artery.*" We must add that we can scarcely conceive of a case calling for the distal operation, in which the subclavian artery should not be tied in its third rather than in its first portion.

To all who are interested in the statistics of the surgical treatment of aneurisms—and what surgeon is not?—we would commend a careful study of Mr. Poland's pages; we look eagerly for the next and concluding portion of his "Report," which we do not hesitate to declare will form, when completed, the most valuable contribution ever made to the literature of its subject.

The next paper to which we shall invite our readers' attention is Art. VI.

*On Skin Grafting*, by THOMAS BRYANT. Mr. Bryant has had considerable experience with the mode of treating ulcers introduced by Reverdin, and his views coincide with those of Mr. Pollock as to the best method of performing the operation. (See number of this Journal for January, 1871, p. 277.) In referring to Reverdin's query, "Is the growth of skin due to the effect of contact or neighbourhood, or is it due to the proliferation of the transplanted element?" Mr. Bryant says:—

> "How the engrafted pieces act in the healing process is not yet satisfactorily settled, and Reverdin's questions, as already quoted, have not yet been completely answered. That they act as direct stimulants to the sore itself, and more particularly to the margin of the sore, there can be but little doubt, for as soon as the 'grafts' have taken, the margin of the sore nearest to them is seen to cicatrize and to send out prolongations of new cicatrizing tissue to meet similar prolongations from the new cutifying centres; the sore in this way becoming subdivided into smaller sores, and then rapidly healing. That the engrafted portions grow by the proliferation of their own cells is likewise proved by the fact that in the case of a white man, upon whose ulcerated leg I engrafted four small pieces of black skin, the whole being no larger than a barley-corn, the black skin grew twenty-fold in ten weeks, . . . the black portions gradually enlarging, and sending out prolongations which joined till one patch of black skin had formed, . . . the ulcer healing as rapidly where the black skin was grafted, as where the white was placed."

In one case Mr. Bryant transplanted a piece of skin upon the everted mucous membrane of an exstroverted bladder; the graft "almost doubled its natural size, but no more; it did not exert any skin-forming power on the mucous membrane on which it was placed." Two lithographic plates (one coloured) and two woodcuts accompany this short but interesting communication.

We come next to the longest paper in the volume, Art. VIII., *Clinical Records*, by J. COOPER FORSTER. A record of one hundred and forty-three very miscellaneous cases, spread over no less than one hundred and fifty-six octavo pages, and without either table of contents or index, is almost as little likely to be consulted, and is almost as effectually buried, as if it had been permitted to slumber in Mr. Forster's manuscript note-books; we have always entertained a great respect for case-taking, and confess to a fondness for case reading, but we are staggered by Mr. Forster's pages. Of the one hundred and forty-three cases, some, to say the least, are less interesting, and less urgently demand publication, than others, and we cannot but think that surgical science would not have been the loser, had Mr. Forster adopted a more rigid rule of selection. In noticing the last volume of the Guy's Reports, we ventured to express a fear that Mr. Forster's zeal for clinical records might diminish, and that as the newness of his broom departed, its work might be less thoroughly accomplished; but we are already forced to acknowledge our error, for he has this year not only swept his ward clean, but has smothered us in the dust.

Art. XII., *On Embalming*, by H. G. HOWSE, M.S., is of considerable practical interest. From Mr. Howse's description of his mode of preserving anatomical subjects we extract the following:—

> "I consider glycerine to be *the* preservative fluid. It does not, however, prevent maggots from breeding in the muscles, nor does it prevent fungus from forming on the dissections when left exposed to the air. To prevent the former, I used to employ, in all the earlier experiments, a watery solution of arsenite of potash, freely injected, before the glycerine. I soon found a practical inconvenience from this, in that it made the subject slightly œdematous, thus requiring more glycerine afterwards to saturate it, and making the injections more expensive. For this reason I tried to prepare a glycerine solution of arsenic. Arsenious acid does not dissolve in this medium in the cold, or only to

a very slight extent. When the glycerine is heated to destructive decomposition, *i. e.* to ebullition, other chemical compounds get formed, and then the arsenic dissolves freely. . . . It is not wise, however, to make it take up much more than a pound to the quart. . . . It should be filtered before using. . . . The injection is always made from the femoral artery, opened at the apex of Scarpa's triangle. Two injection pipes, provided with stop-cocks and with long nozzles, are inserted, one passing up and the other down the artery, and a piece of strong ligature-silk tied tightly around it, to prevent the glycerine escaping. . . . The siphon arrangement is always made use of in injecting, *i. e.*, a long piece of india-rubber tubing is tied over the injecting pipe, and communicates with a reservoir placed considerably above the level of the body. To make the siphon arrangement act, this tube must of course be filled with fluid before inserting the end into the reservoir, and as the viscid glycerine takes a long time in doing this, I usually fill it first with a watery solution of the usual preservative (arsenite of potash), keeping the stop-cock on the injecting tube closed, then inserting the mouth of the tube into the glycerine, and opening the stop-cock. The glycerine injection will now slowly flow. If the arsenical glycerine fluid be made as above recommended, it will be sufficient to inject a quart and a half of it first, corresponding with about one pound and a half of arsenious acid (the injection being completed with pure glycerine). This will be sufficient to prevent maggots breeding in the subject even in summer time. . . . As regards the quantity of glycerine to be used, it will vary with the size of the subject, *i. e.* with the *bulk* of it. . . . The average quantity that we have expended upon our subjects is about three gallons each. Great care must be taken in keeping the cistern and the pipe full of fluid. . . . If, unfortunately, during the progress of the injection, the pipe should become empty, it is best filled up again with arsenical watery fluid. . . . I have said that it is necessary to *saturate* the subject. This is best done in the following way: After about two gallons have been injected it becomes œdematous; it should then be allowed to stand for two or three days, during which blebs form on the surface; these being pricked, a large quantity of fluid drains away. The other gallon of glycerine being then injected, acts much more effectually in the preservation of the subject than if it were all injected together. . . .

"Although the arsenical glycerine quite prevents maggots breeding in the subject, it does not prevent the formation of mildew in very hot weather. . . . For preservation, then, during the hot months, I believe it is best to keep the subject wrapped in cloths soaked in carbolized glycerine, and standing in a tray, covered about half an inch deep with similar fluid so that the cloths may remain constantly moist by capillary attraction. After the glycerine injection is completed, the arteries may be filled with the usual paint or coloured paraffin injection."

The last paper particularly addressed to surgeons is Art. XIII., *A Description of the Appearances of the Human Eye in Health and Disease, as seen by the Ophthalmoscope. Sixth Series, Congenital Anomalies.* By C. Bader.

The anomaly described in this paper is the existence of "a brilliant opaque white, more or less well-defined substance upon or adjoining the optic nerve, hiding from view the parts beneath, and, more or less, the blood-vessels which pass through the white substance. The course of the retinal bloodvessels and the refraction, as ascertained by direct examination with ophthalmoscope, show that the white substance projects beyond the surface of the adjoining retina. The white colour . . . is thought to be caused by white opaque tissue connecting the retinal elements and optic nerve fibres (similar to the connective tissue in the optic nerve outside the eye). Whether the elements of the retina are healthy among this opaque connective tissue is undecided. . . . It does not seem to give rise to any appreciable impairment of sight, which explains its being met with only accidentally; it has been observed at all ages, in eyes of all shapes (more often, perhaps, in hypermetropics); it often occurs in both eyes of the same person."

Mr. Bader's paper is adorned with a chromo-lithographic plate containing five figures.
J. A., JR.

We shall now invite the attention of our readers to the medical papers of the volume, and first to

Art. II. *Cases of Disease of the Nervous System, with Remarks.* By SAMUEL WILKS, M.D., F.R.S.

*A Case of Aphasia, with Remarks on the Faculty of Language and the Duality of the Brain.*—The woman, the report of whose case is accompanied by some very interesting remarks, was 24 years of age and a domestic servant. Without ever having had any previous illness, she was found, a fortnight before she came under the author's notice, speechless and paralyzed on the right side. She improved rapidly under treatment, so far as the paralysis of the limbs was concerned, but although it was evident that she understood written and spoken language perfectly, and although she read books and the newspapers and seemed as rational as any other person in the ward, speech did not return. It was then attempted to teach her to speak afresh. A box of letters of the alphabet, with pictures upon them, was brought to her, and she was taught in the same manner as a child, or as a person learning a foreign language. In repeating to her several times the name of one of the objects on the cards, she would at length articulate the name herself. She sometimes forgot the name of an object she had once learned, and would miscall it, but she never under these circumstances used a word which she had not learned since her illness. When given a number of letters and asked to arrange them into words, she made an effort to do so, but although there was a tendency for the letters to come right, they were seldom placed together quite correctly.

After discussing the different forms of aphasia, Dr. Wilks says that for the production of language three different processes are employed. First, the mind is impressed with ideas through the eye by means of written signs, that is, impressions formed on the retina pass through their own perceptive centres to the central hemispheres, where they are further developed or compounded with other conceptions. Secondly, impressions made on the ear by sounds are carried through the auditory perceptive centres, also to the hemispheres. Thirdly, the sound made by the master must be imitated by the child until the latter can use its organs of speech in a particular way. Thus it is possible for a person to read French or German, who cannot speak either of these languages or understand them when spoken; or he may be able to read them and understand them, but not to speak them. This compound of language made up of spoken, auditory, and visual signs, may be thoroughly broken up for instance, the faculty of speaking may be virtually paralyzed in an exhausted state of the nervous system, or in a less degree from want of food or overexertion. Even in health we lose the memory of words; we may not be able to speak them or write them, but we recognize them when written or spoken.

Dr. Wilks combats the very prevalent opinion that when we are thinking we are really mentally speaking, for he says, it may be true that in thinking, we must conjure up an appropriate sign, but it does not follow that this is by mental or imaginary speech. Thus a person may be able to recall to memory a passage in a language which he has acquired only by reading. A child too may think of the picture of the dog in its lesson book without necessarily attaching to it any spoken, auditory, or visual signs, and the child could then go on to think about various actions of the dog, as running, eating, etc., without the idea of words or any artificial signs. Mental operations are, moreover, frequently very active in the deaf and dumb, and yet they are, of course, without any comprehension of spoken language. It is doubtful, however, whether any really deep intellectual processes can go on without language, and certainly few individuals can accurately think out a subject without speaking or writing, showing that the ideas must have expression in form.

Dr. Wilks then goes on to speak of the duality of the brain. This, he thinks, is proved to exist by the fact that speech may sometimes be regained after it has been lost. With Broca, he places the organ of speech on one side of the brain. Dr. Moxon holds that the localization of the organ of speech on one side of the brain is entirely owing to the education of the two different sides, and that when language is regained, after having been lost, the right side has been in some way educated to take the place of the left. Other facts in favour of the theory of the duality of the brain are the occurrence of hemiplegia from inflammation of one hemisphere, of convulsions of one side from a lateral source of irritation, and of hysterical hemiplegia, in which there is a want of will to move the muscles on one side of the body, whilst the will is good to move those of the other side.

We regret that the space at our disposal has not permitted us to give a fuller abstract of Dr. Wilks's views on the subject of duality of the brain, as well as on that of aphasia. These will be found to be very fully and ably discussed.

*A Case of Hysteria, with Remarks on Diagnosis and Treatment.*—The symptoms in this case indicated that there was no actual lesion in any part of the nervous tract standing in the way of a voluntary act, but that rather the voluntary power itself was at fault; it was in fact ideal rather than real paralysis. Under these circumstances the writer says: "As the object was to arouse the dormant will, and not to treat the paralysis as a physical reality, it was considered that medicine alone would be useless, or worse than useless, but that rather those means should be used which could act directly on the will—in a word, moral means. The patient was informed that an effort on her part was essentially necessary for the cure, for if she did not exert herself she would soon become irremediably paralyzed." Dr. Wilks further says, that the physician is very often responsible for the continuance of symptoms in cases of hysteria, and refers to cases in which cure has taken place after all treatment has been given up. He also expresses the opinion that the chances of recovery for an hysterical patient are greater in a hospital than in private practice, where she is often surrounded by sympathizing, but injudicious friends.

*Contraction and Spasmodic Affection of the Limbs.*—After alluding to the very different opinions held with regard to the immediate cause of spasmodic affections of the limbs, Dr. Wilks reports two cases of intermittent tetany similar to the cases reported in a former volume of these reports by Dr. Moxon, and noticed in the number of this Journal for July, 1870, p. 192.

*Contraction of the Limbs and Sclerosis of the Spinal Cord.*—Dr. Wilks is disposed to believe that the causes of such contraction are to be found in the nerves of the limb itself; that the nerves being in some way disconnected with their centre undergo a degenerative change throughout their course. If this be true, he says, it is also probable that in the rigidity accompanying recent paralysis, the nerve may be acutely involved, which affords an explanation of the pain which occurs on moving the limb. Sclerosis of the cord has been said by Charcot to exist in all cases in which permanent contraction of the limb is a symptom. Dr. Wilks, however, refers to a case in which, during life, the patient lay in bed for many months with his legs drawn up, his heels to the nates, and knees to the abdomen, and had great pain in moving them. He also had extreme excito-motility. In this case the membranes of the spinal cord were found to be enormously thickened, but the medulla itself was not affected except immediately on its surface.

A case of *Tremour* and one of *Paralysis Agitans* are also reported, with remarks, after which the author passes to the subject of *Local Paralytic Affections*, of which the histories of five cases are detailed.

*Ataxia* is apparently considered by Dr. Wilks, to a certain extent, a curable affection, and one which in all cases admits of relief. The treatment which he recommends is the application of the constant-galvanic current, the poles being placed in the neck and lower part of the spine. Patients in whom this treatment has been resorted to early, generally recover.

The reports of three cases of *Syphilitic Epilepsy* close Dr. Wilks's very valuable paper. In the remarks that precede these, he says that, in epilepsy dependent upon syphilitic disease of the brain, the paroxysms occur in rapid succession, and coma may exist in the intervals; there may also be convulsions without loss of consciousness, or the attack may be accompanied by paralysis of one side. In cases in which a succession of fits occur there is reason to refer them to syphiloma between the membranes and the brain; but if this be situated in one hemisphere, the circulation causes the convulsion to be unilateral or predominant on one side, and to be followed by partial paralysis of that side.

Art. III. *A Case of Hæmatidrosis, or Bloody Sweat, Complicating Tetanus.* By SAMUEL WILKS, M.D., F.R.S.—The attack of tetanus, in the case reported by Dr. Wilks, seems to have been idiopathic, as no wound was discovered during life, and only a slight abrasion of the mucous membrane of the uterus, which was prolapsed, detected after death. The perspiration from the patient's forehead stained clean white cloths of a reddish colour. These were given to Dr. Stevenson for examination, who made the following report: "The supposed blood-stains from the sweat are extremely like iron-moulds. On incineration they yield to acids a little iron, and the ash is red from the presence of iron. The stains are quite insoluble in water and in alkaline solutions; in this respect they are totally different from the colouring matter of the blood in all its forms. I have been unable to procure any *coloured solution* or blood-corpuscles from the stains. They are, therefore, not blood. Possibly they may be derived from blood, because they contain *iron;* but just as probably they may have never *contained* hæmatin or hæmoglobin. As the unstained portions of the napkin turn tincture of guiacum blue, the guiacum test is inapplicable. The quantity of colouring matter must have been very small."

Although we are assured that all possible sources of error were guarded against, it seems to us not impossible that the cause of the turning of the tincture of guiac of a blue colour and the discolouration of the napkins by the perspiration may have been the same; in other words, that there may have been some foreign body or impurity in the cloths which were used.

In the cases of bloody sweat which have been recorded, mental emotion of a very depressing character has been a very prominent symptom. This was notably true of Charles IX., of France, who died two years after the massacre of St. Bartholomew, and who confessed to his surgeon, Ambrose Paré, that, whether asleep or awake, he had visions of murdered corpses before him, and, therefore, no doubt, died in great mental agony.

The subject of "bloody stigmata" is discussed in this paper, and the case of Louise Lateau is referred to in full. Certain of the lower animals, says Dr. Wilks, have the power to exude from their skin a reddish fluid. Thus the hippopotamus, soon after its arrival in England, was observed, after taking its bath, to be covered with a red secretion, and the flamingo threw up a red liquid from the stomach, which has been found by Mr. Lowne to contain red corpuscles, and which is probably used for nursing its young. This may, Mr. Lowne says, account for the old fable of the pelican feeding its young with its blood, supposing that the flamingo was mistaken for the pelican.

Art. IV. *Toxicological Cases.* By Thomas Stevenson, M.D.—Four cases are reported in this paper. In the first case a man, aged 21 years, swallowed three fluidounces of nitric acid with suicidal intent. Death took place seventeen hours after the poison was taken. The post-mortem appearances were those usually observed in poisoning by the mineral acids.

The patient, in the second case, drank about a teaspoonful of strong liquor ammoniæ. Death resulted, it was thought, from some obstruction of the respiratory apparatus, and was sudden. The danger arising from swallowing ammonia is greater from its action on the larynx than from that on the stomach.

In the third case, three-sixteenths of a grain of atropia were administered by mistake to a child six years old. The usual symptoms of atropia poisoning followed. Four and a quarter hours after the poison was taken, one-ninth of a grain of acetate of morphia was injected subcutaneously. In twenty hours the child had quite recovered from the effects of the alkaloid. But Dr. Stevenson is not disposed to attribute any share in the recovery to the action of the morphia. He is inclined to think, however, that we have an antidote for atropia in physostigma.

The patients in the last case reported by Dr. Stevenson were two children who were poisoned by eating mushrooms. One of them had partaken freely of the fungi, and died; the other only ate one, and recovered. The symptoms were vomiting, violent pains in the head and abdomen, restlessness, subsultus, and thirst. The legs were also drawn up towards the abdomen. After death, in the fatal case, the stomach and the whole of the small intestines were contracted and empty, and the mucous membrane congested throughout the whole of the alimentary canal. The liver was fatty.

Art. V. *Laboratory Notes.* By Thomas Stevenson, M.D.—In two specimens of milky fluids removed by paracentesis from the abdomen, the turbidity appeared to be due to very fine suspended particles of albuminous matter, which were not dissolved by ether, even when the fluids had been previously treated with acids and alkalies. Dr. Stevenson, believing the question, whether the so-called fatty heart consists of a real conversion of the muscular fibre into fat, to be an open one, has examined the mottled interior of the ventricular walls of two such hearts, with the following results:—

| | Fat per cent. |
|---|---|
| Normal heart . . . . | 0.68 |
| Fatty heart, No. 1 . . . | 1.54 |
| Fatty heart, No. 2. . . . | 3.83 |

It thus appears that there is a real conversion, to a certain extent, of muscular fibre into true oily fat, soluble in ether.

Some salivary calculi subjected to analysis were found to contain, in one instance, 78.13 per cent. of the mixed phosphates of lime and magnesia, and 21.87 per cent. of organic matter; in the other the calculus consisted, besides organic matter, of earthy phosphates and carbonates, the carbonates, however, predominating over the phosphates.

Dr. Stevenson finally discusses the "Effects of Drinking Water Contaminated with Zinc." He is inclined to think, in opposition to Fonssagrives, that water may become so contaminated when kept in zinc or galvanized iron vessels as to be, when drunk, seriously injurious to health. Under certain conditions the water acts so energetically upon zinc and upon galvanized iron as to become milky from the large amount of the metal held in suspension in it.

Art. VI. *Remarks on Cerebral Disease having its Origin in Syphilis.* By G. OWEN REES, M.D., F.R.S.—Dr. Rees thinks that cerebral disease of syphilitic origin may generally be recognized even in cases where the possibility of infection is denied by the patient by attention to the following points. The paralytic seizure when dependent upon syphilis is generally the immediate result of some violent exertion, or some long-continued muscular effort carried on to fatigue, and the collapse is often so great as to threaten immediate dissolution. The hemiplegic and the paraplegic symptoms are peculiar in character, there being marked irregularity in loss of motor power, and of sensation as affecting opposite sides of the body. Pain in the head and tenderness of the scalp are scarcely ever wanting. Aphonia has been observed in many cases in the early stage. Whenever these symptoms are presented by a patient, the writer of the paper thinks a course of mercurial treatment should be at once begun. "The power of the iodide of potassium," he says, "in absorbing homologous growths, such as those observed on bone, is beyond doubt, and probably we may confidently trust to its use in all cases of new growth of connective tissue, where the mere proliferation of cells has not been succeeded by fibrillation and an approach to retrograde metamorphosis. These changes occurring, the formation of gummata seems to place such tumours beyond the power of the iodide of potassium, while mercury appears to be their especial antagonist.

Art. IX. *A Case of Simple Stenosis of the Œsophagus, followed by Epithelioma.* By C. HILTON FAGGE, M.D.—In the case reported by Dr. Fagge there was reason to believe, as the title of the paper implies, that the epithelioma was probably of comparatively recent development, and that the dysphagia which had been a marked symptom for many years before the death of the patient was caused by the narrowing of the cardiac end of the œsophagus. He was 84 years old at the time of his death, and had had for upwards of forty years a difficulty in swallowing food, which he thought originated in the habit of eating fast. When it first came on it seemed to him as if, when he swallowed anything, the wind met it and forced it back. He used to wash down solid food, which was always divided into very small portions, with liquids. He was not known to have suffered from sickness, nor did he ruminate nor bring up his food in pellets. After death the upper part of the œsophagus was found to be rather less than an inch in diameter. About four and a half inches from the cardia it became slightly dilated, its diameter reaching one and a half inch. About two inches lower it became narrower, at first rapidly, afterwards more gradually. The narrowest part of all was at the termination of the œsophagus in the stomach. The calibre was there so small that an ordinary lead pencil was firmly grasped by the gullet. At its widest part the walls of the œsophagus presented a large irregular opening, two inches in length, which was evidently in part the result of ulceration, but which may also in part have been caused by injury during removal from the body. On one side the lung was adherent; there was also close to the outside of the gullet a lymphatic gland, which was the seat of epithelioma. A microscopic examination of the specimen was made by Mr. Howse, who reported that it presented the ordinary appearances of epithelioma. Dr. Fagge also gives the history and post-mortem appearances of a case reported by Dr. Wilks, in the seventeenth volume of the

"Pathological Transactions," in which many of the same symptoms occurred as in the case which forms the nucleus of his paper. Dr. Wilks's case was found, however, to be simply one of stenosis, which, there was reason to believe, was congenital. The author also refers to some cases reported by Dr. Graves, and by Sir Everard Home, in which similar symptoms existed. These were attributed to spasmodic stricture of the œsophagus, but there can be little doubt, Dr. Fagge says, that they were due to stenosis. In regard to the so-called dysphagia lusoria, the writer says there is no good reason to believe that it is produced by any peculiarity in the course of the right subclavian artery. Two plates accompany this communication.

Art. X. *Clinical Cases.* By S. O. Habershon, M.D.—These cases, the histories of which are detailed in this paper, are as follows:—

1. Cancerous Disease; Paralysis of the Ninth Nerve.
2. Paraplegia; Strumous Tumour in the Spinal Cord.
3. Rheumatism; Cardiac Inflammation; Disease of the Brain from Embolism.
4. Disease of the Aortic Valves; Ulceration of the Valves; Acute Cerebro-Spinal Meningitis.
5. Cardiac Disease; Imperfect Ventricular Septum, patient aged 54.

The patient with cancerous disease was a woman, aged 52, who five years previously to coming under Dr. Habershon's care, had a small tumour of the breast, which she was advised by Mr. Birkett to have removed. There was at the time of admission a lateral curvature of the spine, so that the ribs on the right side were on a lower plane than the crest of the ilium. On asking the patient to protrude her tongue, the lip was sent to the right side, and that side of the tongue was quite flaccid and wrinkled; the left side, however, felt fleshy and firm. This was associated with inability to manage the food, with paralysis of the sterno-hyoid muscle on the right side, and with slight impairment of the right facial nerve.

At the post-mortem examination, masses of cerebriform cancer were found within the cranium. One such mass was situated on the basilar process, more on the right than the left side, and extending into the right temporal bone, and this involved the eighth and ninth pair of nerves, and reached up to the internal auditory foramen, one side of which was implicated. The muscles supplied by the ninth were yellowish and wasted. The third and fourth dorsal vertebræ were affected with cancerous growth, as were also both ilia.

A case presenting some similar symptoms, which was under Dr. Habershon's care, is also referred to in this paper.

The patient with paraplegia was a woman, aged 40, who, in addition, presented the signs and symptoms of phthisis pulmonalis. About a year before coming under observation, she began to experience aching pains in both legs, but in the right more than in the left; this was followed in the course of a week by numbness and a sensation of "pins and needles" in the feet; at the same time, her legs began to grow weak, and she found herself unable to get up and down stairs without assistance. The numbness gradually crept upwards, and the parts affected in this way felt cold to the patient. In the act of walking, her legs were spasmodically drawn up, and the foot thrown out. On moving the legs, she experienced acute pains in the knees and shins, which subsided when the limbs were at rest. Sensation was so much impaired, that she was quite unable to perceive a gentle touch. Pinching and pressure excited reflex action, causing piercing pains in the leg and foot.

The paralysis gradually became more marked, and the patient finally sank from exhaustion produced by erysipelas and a bedsore.

At the autopsy, in addition to disease of the lungs and ovaries, a round tubercle of the size of a small cherry was found in the lower part of the dorsal region. This quite took the place of the tissue of the cord for the length it occupied, so that scarcely any trace of nervous tissue could be seen about it.

In the third case, the patient, who was also a woman, and who had been for some time a sufferer from heart disease, was, when admitted into Guy's Hospital, paralyzed upon the right side. The paralysis was attended with aphasia. Its dependence upon embolism of the left middle cerebral artery was diagnosticated during life, and proved after death.

In the case of disease of the aortic valves, acute cerebro-spinal meningitis supervened, it was thought by Dr. Habershon in consequence of the changes in the composition of the blood produced by the ulceration of the valves. Although pus was found beneath the arachnoid, about the pons, the diamond-shaped space, the cerebellum, and all down the spinal cord on its dorsal surface, the symptoms were not indicative of the disease, for the patient is said merely to have been strange in his manner, to have walked about the ward at night, and two days before his death to have complained of severe pain in the back of his head and neck.

The chief interest in the remaining case reported by Dr. Habershon is the fact that the patient had lived in apparently perfect health for fifty-nine years with an imperfect septum between the right and left ventricles of the heart. During the life of the patient, the malformation was not suspected and the disease under which the patient was labouring was in consequence of the physical signs thought to be dependent upon mitral regurgitation. The bruit was, however, very distinct to the right of the sternum, and there was unusual oppression at the scrobiculus cordis. After death, the communication between the ventricles was found immediately below the aortic valves, at the base of the heart; it was about a quarter of an inch in diameter, circular in form; on the left side it had a rough atheromatous margin; on the right there was a funnel-shaped opening behind the curtain of the tricuspid, and small ridges of fibrin were observed for an inch upon the valve, as if the direction of blood had been from the left to the right.

Art. XI. *A Record of Observations of Temperature during Parturition and in the Puerperal State.* Presented by J. BRAXTON HICKS, F.R.S. Arranged by F. S. CAREY, Esq., Senior Obstetric Resident.—Mr. Hicks has not attempted to draw any conclusions from observations of temperature which he has presented in this paper. He has put them on record simply because, to use his own words, "it is impossible to say how far any rise of temperature may indicate danger, unless we are aware what is the natural temperature; or within what limits we may expect it to vary from slight causes in a natural state of convalescence." In cases in which the labour was perfectly natural and not tedious, the temperature of the patient was scarcely affected by it. There was in some instances a rise of temperature on the third day, but this was by no means true of all the cases. The temperature, on the other hand, was observed to be very high immediately after the completion of labour in three primiparæ who were delivered by the forceps after unusually protracted labours, and also in one patient in whom premature labour was induced by introducing a catheter into the uterus and injecting four fluidounces of water between the uterus and the membranes and leaving the catheter in.

Art. XIV. *An Account of the Recent Additions made to the Hospital*

*Buildings.* By J. C. Steele, M.D.—Dr. Steele gives in this paper a very full and interesting account of the plan of a new wing which was completed last June, and which increases the capacity of the hospital by at least 150 beds. The method of ventilating and heating the new building are also explained and seem to be in accordance with the most advanced ideas on these points. Three diagrams accompany this paper.

Art. XV. *Numerical Analysis of the Patients Treated in Guy's Hospital during* 1870. By J. C. Steele, M.D.—From this paper we learn that the whole number of patients treated at Guy's Hospital during the year 1870 was 81,771, of whom 5123 were under treatment in the wards of the hospital, and 76,648 came under the category of out patients. The daily sick population of the Hospital was 486. The death-rate for the year was 10.76. The percentage is higher than the average, simply because, while the number of admissions has been small, the character of the injuries or surgical complaints of those admitted has been severe. The average stay of each patient, whether living or dying, in the Hospital, has amounted to 36.92 days. Of the 5123 patients treated in the wards, 1673 are reported cured; 2507 relieved; 396 unrelieved; 498 died, and 499 remained at the close of the year under treatment. The list of accidents admitted into the surgical wards during the year amounted to 827, and the deaths resulting therefrom were 91; 61 amputations were performed; 31 times in consequence directly of accidental injury; 24 deaths were attributed to pyæmia, 8 of which occurred after operations. The following analysis of 7312 cases of death from pyæmia occurring in seventeen years, or between 1854 and 1871, will be interesting to our readers:—

| | |
|---|---|
| Pyæmia after surgical operations: | |
| After amputation of limbs for compound fracture and laceration | 56 |
| After amputation of limbs for disease, excluding injury . . | 37 |
| After other operations for injury . . . . . . . . . | 3 |
| After operations for disease, excluding amputations . . . | 30 |
| | 126 |
| Pyæmia without surgical operation: | |
| After compound fracture of limbs . . . . . . . . | 29 |
| After other external injuries . . . . . . . . . | 30 |
| Consequent on disease . . . . . . . . . . | 109 |
| Apparently idiopathic . . . . . . . . . . | 18 |
| | 186 |
| | 312 |

J. H. H.

---

Art. XIX.—*Medico-Chirurgical Transactions.* Published by the Royal Medical and Chirurgical Society of London. Vol. LIV. 8vo. pp. xlii., 358. London: Longmans, Green, Reader, & Dyer, 1871.

According to our custom, we herewith present our readers with an analysis of the papers contained in the last volume of the *Transactions of the Royal Medical and Chirurgical Society.* The volume fully maintains the reputation which the series has gained for itself, and will be found, we think, not an unworthy successor to the earlier volumes. The Society numbers among its members the most distinguished physicians and surgeons of Great Britain, and therefore contributions to these *Transactions* are derived from a greater variety of sources than are those of any other medical series with which we are acquainted.

We shall first call attention to the medical papers in this volume.

Art. I. *On the Electrolytic Treatment of Hydatid Tumours of the Liver, with an Addendum on Simple Acupuncture.* By C. HILTON FAGGE, M.D., F.R.C.P., etc., and ARTHUR E. DURHAM, F.R.C.S.—It will be recollected that Dr. Althaus recommends, in his work on the Electrolytic Treatment of Tumours and other Surgical Diseases, the application of electrolysis to the treatment of hydatid tumours. Dr. Fagge and Mr. Durham appear to have been the first to carry this suggestion into effect in the human subject. In this paper they give details of eight cases of hydatid disease of the liver in which the operation was performed. This number, these gentlemen say, is as yet insufficient to enable them to state with certainty that the operation will invariably cure the disease, but up to the time of writing the paper they have not met with a single instance of failure. The results of the treatment are stated to be as follows: In three cases the tumour disappeared so entirely that no trace of it could be discovered. In three cases some ill-defined fulness existed when the patients were last seen, and in another case, in which there had been two distinct tumours, a mass the size of a walnut could be felt when the patient was last examined. In the remaining case complete recovery took place at the end of nine months.

As regards the production of pain and constitutional disturbance, the results of the operation appear to have varied considerably in different cases. In most instances more or less pain came on after a time when the effects of the chloroform, which was always used, had passed off. The patient, if a child, became fretful. There was always some febrile disturbance, the temperature rising to 99.5°, 101°, or even 102.6°. By the third or fourth day, however, all these symptoms generally subsided, but in one instance, the temperature remained high for at least nineteen days after the operation.

The operation was performed in general accordance with the directions given by Dr. Althaus for the cure of other diseases by the electrolytic method, his electrolytic needles being passed into the tumour, one or two inches apart; they were then attached to two metallic wires, both connected with the negative pole of a galvanic battery of ten cells. A moistened sponge formed the termination of the positive pole, and this was placed on the patient's skin at a little distance from the points of entrance of the needles. Its position was changed from time to time during the operation. The current was allowed to pass for about ten minutes in some cases and in others for a somewhat longer period. At the end of this time the needles were gently withdrawn and the seats of puncture were covered with adhesive plaster.

As regards the *modus operandi* of electrolysis in the cure of hydatid tumours there is at present room for doubt.

> "We have, the author says, already stated that in several instances we have been able to detect the presence of fluid in the peritoneal (and in one instance, even in the pleural) cavity very soon after the operation, and that we believe this to have resulted from the passage of part of the hydatid fluid through the apertures made by the needles. It has occurred to us that this may perhaps be an essential element in the success of the operation. It is well known that simple tapping of an hydatid cyst, is often sufficient to cure the disease; and it may be that electrolysis is, as it were, in effect a kind of subcutaneous tapping, with effusion of the cyst fluid into a serous cavity. We have even thought that the hydrogen gas set free within the tumour by the electrolytic action of the current accumulating in the upper part of the cyst, may cause a pressure suf-

ficient to *force* out the fluid, either by the side of the needles during the operation or subsequently through the apertures made by them. If this be not the case, an equally successful result might possibly be attained by simple acu puncture of an hydatid tumour."

In the addendum to the paper, a case is reported in which a hydatid cyst of considerable size was treated by simple acupuncture. The patient, a girl 9½ years of age, having been placed under the influence of chloroform, two fine gilt needles were introduced into the interior of the tumour at two of its most prominent parts, they were left in for five minutes, when it was found that one of them had slipped out of the tumour. Both of them were then withdrawn. Immediately afterwards the abdomen felt less tense than before. The temperature began to rise soon after the operation, and by 2 P.M. on the following day had reached 102°. Fluctuations were noted for some days afterwards, the highest point observed being that of 102.6° on the fourth day from the performance of the operation. In other respects the child appeared to be as well as usual. The tumour underwent gradual but progressive diminution in size, but unfortunately the child passed from under the observation of Dr. Fagge, and the result is not certainly known although there is every reason to believe that it was favourable.

Dr. Fagge and Mr. Durham admit that it is generally believed that hydatid fluid exerts an irritant action on serous membranes, and that many instances have been recorded in which death has been rapidly brought about by the rupture of hydatid cysts and the pouring out of their contents into the peritoneal cavity. But they say it is probable in these cases that death is due to the escape of secondary cysts and scolices, which are much more capable of producing severe irritation than the chemically inert hydatid fluid, and which are not likely to pass through the minute openings made by the needles in the operation of acupuncture or electrolysis.

Art. II. *A Third Communication on the Endemic Hæmaturia of the South-eastern Coast of Africa, with Remarks on the Topical Medication of the Bladder*, by JOHN HARLEY, M.D., Lond., F.R.C.P.—Since Dr. Harley presented his last communication to the Society—he "has had almost daily opportunity throughout nearly a year of watching the progress of the disease," and is consequently able to give more precise information respecting certain features of this interesting malady. His observations have reference, *first* to the prostatic form of the disease and its treatment; and, *secondly*, to the structure and development of the parasite. In the prostatic form of the disease, there is very apt to be—

"An intermittent discharge, by the urethra, of venous blood, never exceeding a teaspoonful, and always mixed with urine, recurring after variable intervals of from two to fourteen days, and continuing for several days in succession. Excepting a cloudiness of the urine from the presence of free mucus, which on settling formed a russet or drab-coloured fluffy deposit, the morbid appearances were confined to the last tablespoonful of urine. With this was discharged a variable amount of blood and the branched mucous or blood casts of the burrows of the parasites so characteristic of the disease. The eggs were chiefly contained in these casts, but numbers were always to be found free in the urine."

Dr. Harley at first used in the treatment of the disease remedies which are eliminated by the kidneys, but failing to effect any decided improvement in the condition of his patients he substituted local for general treatment. This consisted in the injection of various substances in the form of solution or emulsion into the bladder. The chief of these were iodide of potassium, quassia, wormwood and oil of male fern. With the last three no decided results were obtained, but the iodide of potassium when used in this way seemed to have valuable parasiticide qualities. A solution, Dr. Harley says, containing five grains of this salt in the ounce fails to produce the least irritation when placed in the eye, but if a healthy leech be dropped into it, the animal immediately begins to writhe, the movements then become arrested, and death occurs in the course of an hour or so. He began by injecting the following every other morning. R. Potassii iodidi gr. x; infusi quassiæ (ʒiv ad f℥xx) ℥v. Solve et fiat injectio. The iodide of potassium was gradually increased to gr. xxx, and this treatment was continued for two months. The iodine injection was usually retained for three hours, iodine being at the end of that time easily detected in the urine. The catarrhal symptoms and iodine taste caused by these large doses of the salt were at first rather severe, but the patient gradually became accustomed to them, and ceased to make complaints. The iodide of potassium never produced the least urethral or vesical irritation. Speaking of the results of this topical treatment, Dr. Harley says:—

> "The first effect of the injection was to bring away a great quantity of the branched mucous casts of the tunnels formed by the parasite with hosts of imbedded eggs. Some of these casts measured more than one-fourth of an inch in diameter. After a few weeks the casts lose their solid cylindrical character, and were ultimately replaced by long skin-like membranes, destitute of structure, and only here and there thickened by the usual mucous corpuscles. These casts seemed to be formed by exudation from the walls of the emptied tunnels. They were almost destitute of ova, and some of them were three-fourths of an inch long. At the same time free ova nearly disappeared from the urine. * * Thus it appears conclusively that the topical treatment was effectual in clearing away the accumulated products of the parasite, in securing their expulsion as fast as they were formed, and ultimately in destroying the adult parasite."

Several pages are devoted to the discussion of the structure and development of the embryo of the distomum hæmatobium, but in consequence of want of space, we can only refer those of our readers who are specially interested in the subject of the parasite, to this part of Dr. Harley's paper.

There is reason to believe that the animal gains access to the body through the skin. It is stated that every colonist of Natal is attacked during the first year or two of his residence in the country with large indolent sores, which spread like syphilitic ulcers and leave deep scars. There is reason to believe that these are due to the irritation excited by the animal implanting its ova in the skin of the individual while bathing. The animal may, however, enter the body through the mucous membrane of the stomach or rectum, or by the more direct route of the urethra.

Art. III. *On Temporary Glycosuria as a Sequel to the Cholera*, by WILLIAM SEDGWICK, M.R.C.S.

Art. IV. *On the Duration of Phthisis Pulmonalis, and on certain Conditions which influence it*, by CHARLES THEODORE WILLIAMS, M.D.

Abstracts of these papers will be found in the No. of this Journal for April, 1871 (pages 567 and 558).

Art. VI. *On Neuritis of the Brachial Plexus*, by JULIUS ALTHAUS, M.D., M.R.C.P., etc.—The patient whose case is reported in this communication presented a complete paralysis of motion and sensation of the whole of the right upper extremity. The muscles of the arm were not wasted, and the temperature of the limb was not lower than that of the left arm. There was an absence of electro-muscular sensibility to the induced current, but when a powerful continuous current from Daniell's battery (sixty cells) was applied to the arm the patient exclaimed that she felt sensations of heat, pricking and tingling in the arm and fingers; and the muscles, more especially the flexor muscles of the fingers responded to the current by sluggish, yet plainly perceptible, contractions. The daily application of the continuous current to the paralyzed extremity formed the only treatment in the case. The result is stated to have been exceedingly satisfactory. After four applications sensation returned in the paralyzed limb, so that the patient was again able to perceive touch, pricking, pinching, etc., just as well as before the commencement of the affection. The paralysis of motion proved more stubborn, but after seven applications the girl was able to move her fingers. A fortnight later she could flex and extend the wrist. The treatment was suspended for six weeks, during which time no improvement took place. The continuous current was then reapplied and continued until recovery was complete.

Dr. Althaus is disposed to attribute the recovery in this and similar cases partly to the power which the continuous current has of preventing granular degeneration of the muscles by making them contract. It must also have the property of re-establishing the conductivity of the sentient as well as of the motor fibres of paralyzed parts; although we are ignorant as yet of the manner in which this is done.

The differential diagnosis in this case is very carefully discussed by Dr. Althaus, who gives very good reasons for considering it one of Neuritis of the Brachial Plexus. "This plexus imparts," he says, "motive and sentient power to the whole upper extremity; it animates the rhomboid muscles, the serratus anticus, the supra and infra spinatus, the subscapularis, the anterior portion of the latissimus dorsi, and all the flexors and extensors, pronators and supinators of the arm and hand. Not one of these muscles had escaped the paralyzing influence, while muscles in their immediate neighbourhood, which are animated by a different set of nerves, had remained in perfect condition. Moreover the skin of the back of the head, the neck, and the ear, had never lost its sensibility. The absence of electro-muscular sensibility, the paralysis of sensation, the limitation of the paralysis to an upper extremity render it improbable that the patient was suffering from cerebral disease, and the same symptoms enabled him to exclude spinal disease from consideration.

Art. VII. *On Sporadic Cretinism occurring in England*, by C. HILTON FAGGE, M.D., F.R.C.P., etc.—Sporadic cretinism, Dr. Fagge says, differs from the more ordinary form of cretinism in the absence of any enlargement of the thyroid body, and in the presence of fatty symmetrical tumours, one of which lies beneath the skin of the neck, on each side, just external to the sterno-cleido-mastoid muscle. The affection is not necessarily congenital. It may arise as late as the eighth year in a subject previously healthy and well-developed. It is not inherited syphilis, nor is it related either to rickets or scrofula. It has been supposed in certain cases to have resulted from one or both of the parents having been intoxicated at the time of procreation; but this explanation Dr. Fagge thinks does not hold good in all cases, even for those which are congenital.

The sufferers from sporadic cretinism are generally of a mild and tranquil disposition, and do not possess the mischievous tendencies of idiots, with whom they are very apt to be associated. As goitre also exists in the same parts of England, Dr. Fagge believes that there is a certain antagonism between it and cretinism, and that where a large goitre exists, it may possibly have the power of protecting against the more severe effects of the endemic influence, and thus that cretinism is associated with an enormous bronchocele only when the exciting cause is present in a very intense degree.

Art. XIII. *On Dextral Pre-eminence,* by WILLIAM OGLE, M.D. Oxon, F.R.C.P.—This is one of the ablest and best-written papers in the volume. After briefly reviewing the literature of the subject, Dr. Ogle gives his reasons for believing that right-handedness depends on some predominance of the left brain. and left-handedness, when it occurs, on a transposition of this structural peculiarity, whatever it may be. If the two hemispheres be compared, the left will be found a little larger, and in the frontal lobes, especially, the left convolutions will be observed to be much more complicated. In the few instances in which he has had the opportunity of examining the brains of left-handed persons, the reverse of this has been found to be the case. The brains of monkeys possess the same peculiarities, and Dr. Ogle has satisfied himself by careful observation at the London Zoological Gardens, that the majority of monkeys are right-handed, and that a very small proportion (only three out of twenty-three), are left-handed. The parrot, too, will use its right leg to support itself in preference to its left. Thus of eighty-six parrots, sixty-three invariably supported themselves on the right leg, while the remaining twenty-three as invariably perched on the left one.

It might be objected to Dr. Ogle's view, that the greater development of the left brain may be the consequence of the increased use of the right side, and not its cause. But this disparity between the two hemispheres exists in fœtal life, and Gratiolet has asserted that the convolution of the left frontal lobe appears earlier than the corresponding convolution of the right. Besides which, it is clear that some anatómical difference between the two sides must precede the right-handedness, and this difference must be somewhere in the brain, for the author shows very conclusively in the first part of his paper, that it cannot be referred to a conventual agreement made between the members of a community and handed down by educational influence from parent to child through successive generations. In a former paper he has expressed an opinion that the cause of the greater development of the left hemisphere is to be found in the difference of the blood supply to the two sides of the brain, and to this opinion he is disposed to adhere. He has found that the arteries which convey blood to the brain are, as a rule, somewhat larger on the left side than on the right, and that this rule apparently breaks down in the case of left-handed men. This increased size of the arteries of the left side, he thinks, cannot be regarded as a consequence of the increased use of the hemisphere to which they go, since the left vertebral artery is generally larger than the right, and yet from their uniting to form the basilar artery, they must be precisely alike so far as the *vis a fronte* goes. The course of the left carotid artery is, moreover, much less tortuous than that of the right, and this will of course secure a more liberal supply of blood to the corresponding hemisphere. In monkeys which have been shown to be the subjects of dextral pre-eminence, the arterial branchings appear to accord with those of man. "But in parrots," he says, "I find a striking corroboration of my hypothesis. In these birds there is very great variability in the arrangement of the right and left carotid arteries. In some few the two are of equal size. But this is the exception. In the great majority the arteries are unequal, and when this is the case, it is invariably the left carotid which is the larger of the two, as Merkel years ago pointed out. Sometimes, indeed, it would appear that the right carotid is rudimentary, or even entirely absent, and that the brain receives its whole blood supply from the vessels on the left. It is difficult to suppose that this is a mere coincidence; but if it be anything more, it renders the explanation I have advanced in the highest degree probable."

In favor of Dr. Ogle's view is the fact that in left-handed people paralysis of the left side is accompanied by loss of speech, which may be regarded as an indication that the left side of the brain is more developed in their bodies than the right.

Art. XIV. *On the Modifications produced in the Temperature of the Body by the Local Application of Cold and Heat*, by Frederick Barham Nunneley, M.D.—With the view of determining whether, under any circumstances, local applications of cold modify the temperature of the body generally, or of any part of it other than that on which they immediately act, Dr. Nunneley instituted a series of experiments, the result of which he thus sums up:—

"No change occurs in the temperature of any part of the body from the local application of cold, except that on which it immediately acts, unless the individual is in a state of more or less nervous exhaustion or there is decided coolness of the surrounding air.

"The local application of heat, exceeding in degree that of the blood, causes a slight rise of the general temperature, and a more considerable one of that of the extremities.

"If cold is now applied locally—as to any one of the extremities—the general temperature falls slightly and that of the extremities more notably below the natural standard; but both this fall and the previous rise with heat vary considerably, not, however, with the individual susceptibility to painful sensations of temperature, but rather in proportion to the facility with which the conditions regulating the normal balance of the bodily temperature can be disturbed.

"This change, unlike a reflex act, occurs comparatively, or even very slowly, and its amount is equal in all the extremities; hence, it is not, at any rate in many cases, a reflex action, taking place between homologous parts, as Brown-Séquard has described it." In conclusion he says, "the practical lesson which the facts teach us, is that partial chills *can* modify the temperature, and that a condition of depressed nervous energy is one in which an individual is particularly exposed to the effects of slight impressions of cold."

This paper is accompanied by two tables.

Art. XVI. *Report on Two Series of Cases in which Syphilis was communicated in the Practice of Vaccination*, by Jonathan Hutchinson, F.R.C.S.—Few of our readers will, we think, after reading Mr. Hutchinson's admirable report, have much doubt that vaccination may sometimes be the means of inoculating syphilis. In the first series of cases, twelve persons, mostly young adults, were vaccinated from a healthy looking child. The progress of the vaccination appears to have been satisfactory in all, but during the eighth week indurated chancres were found on the arms of ten of them. They were all treated with mercury, which caused a rapid disappearance of the primary sores. Five months later, constitutional symptoms had been developed in four of the patients. The vaccinifer at the time of the operation had all the external evidence of health, but upon close examination two months later, was found to have condylomata. In the second series of cases, there were unquestionable symptoms of constitutional syphilis in nine children who had been vaccinated from the same patient. Suspicious symptoms occurred in six others, while several had escaped all infection. The vaccinifer, on examination, was found to be a fine, healthy looking child, but presented slight local symptoms indicative of inherited syphilis.

In both instances the child had been selected on account of its very healthy appearance, which had moreover attracted the attention of those who were vaccinated from it, and Mr. Hutchinson takes occasion to remark that "it is a mistake to suppose that syphilitic infants always present a withered, 'old-man-like' aspect; in many instances, although manifesting specific local symptoms, they may grow well and remain plump and fat. This occurs, I believe, with especial frequency when the child does not suffer from a skin eruption, and under such circumstances condylomata are not unfrequently the only symptoms by which the existence of the taint is proved."

In the first series two of the patients wholly escaped, and in those in whom chancres occurred, nearly half of the vaccination punctures escaped. This immunity of some persons, while others suffered, and the absence of induration in some vaccination punctures, and the escape of some while others were infected in the same person, Mr. Hutchinson explains by supposing that the syphilitic virus and the vaccine virus were present in different fluids, and that it was possible to convey the one in all its vigor without necessarily conveying the other; and it is important to note that the two individuals who escaped were the two who were first vaccinated, since it is not improbable that the lymph which first flowed was unmixed with blood. It would thus seem that the inoculation of syphilis in these cases depended upon the admixture of the blood of the syphilitic infant with the lymph of the vaccine vesicle, and that it is quite possible to vaccinate successfully from a syphilitic infant in the stage of utmost potency, as regards its blood, without communicating syphilis, if the lymph be free from blood. The success or non-success of the vaccination, as vaccination, seems to have had nothing to do with the induration of the scars. Some scars in which the vaccination vesicle had not "taken," became indurated, whilst many punctures which did "take" escaped. The period of incubation seems to have been very nearly the same in all cases, and was a little more than five weeks.

The vaccinifers and the patients vaccinated from them were seen by a committee consisting of Dr. Samuel Wilks and Messrs. Savory, Gascoyen, and Thomas Smith, who reported that most of the latter presented unequivocal evidence of constitutional syphilis, and that there was no reason to doubt, from the appearances presented by the arms and from the history of the cases, that the disease had been conveyed by vaccination. J. H. H.

The remaining papers are particularly interesting to surgeons, and the first to which we shall invite our readers' attention, is

Art. V. *Three Cases of Injury to the Brain, with an Appendix of Cases*, by GEORGE WILLIAM CALLENDER, F.R.S., Surgeon to St. Bartholomew's Hospital.—This very interesting paper should be read in connection with those on "The Anatomy of Brain Shocks," which the author published in the third and fifth volumes of the *St. Bartholomew's Hospital Reports* and which were noticed in the numbers of this Journal for July, 1868, p. 225, and January, 1870, p. 191. In those papers Mr. Callender narrated cases in which convulsions were associated with disease of the meninges, and more especially with disease about the course of the middle cerebral arteries. Collecting now those cases, twenty-three in number, in which from lesion of the substance of the encephalon, there was one-sided paralysis, and adding to them three cases recently under the care of Sir James Paget (here given in detail), and eighty-three cases taken from the works of Bouillaud, Abercrombie, and Andral, and from the register of St. George's Hospital, a total of one hundred and nine cases of one-sided paralysis is obtained; these the author proceeds to analyze, and shows conclusively that convulsions particularly attend lesions of that part of the right hemisphere which is above the corpora striata. The figures are as follows:—

| | |
|---|---|
| "Cases of side paralysis, | 109 |
| Cases in which rigidity or convulsions occur, | 46 |
| Cases of right side paralysis, | 48 |
| Cases in which rigidity or convulsions occur, | 7 |
| Cases of left side paralysis, | 61 |
| Cases in which rigidity or convulsions occur, | 39 |

"When examined with reference to the parts of the hemispheres involved in the disease or injury, we have the following results:—

"Cases in which parts above the corpora striata are affected:—

| | | |
|---|---|---|
| Left side, | 37 | cases. |
| Convulsions or rigidity in | 7 | " |
| Right side, | 47 | " |
| Convulsions or rigidity in | 39 | " |

"Cases in which the corpora striata, including the optic thalami, are affected:—

| | | |
|---|---|---|
| Left side, | 11 | cases. |
| Convulsions or rigidity in | 0 | " |
| Right side, | 13[1] | " |
| Convulsions or rigidity in | 0 | " " |

Four of the seven cases in which rigidity or convulsions attended lesions of the left hemisphere (right side paralysis), were instances of cerebral abscess, and the convulsions were probably caused by pressure transmitted to the right side of the brain.

An ingenious diagram is appended to Mr. Callender's paper, showing the seat of disease in the various cases included in his tables.

Art. VIII. *A Clinical Report on Xanthelasma Palpebrarum, and on its Significance as a Symptom*, by Jonathan Hutchinson, F.R.C.S., etc.—A full abstract of this paper which is one of great interest and value, appeared in the quarterly summary of this Journal, in the number for July, 1871, pp. 264 *et seq.*

Art. IX. *On the Classification and Tabulation of Injuries and Surgical Operations in time of War*, by Deputy Inspector-General T. Longmore, C.B., Professor of Military Surgery in the Army Medical School, Netley.—In this paper Mr. Longmore describes and compares the several systems of classification and tabulation of gunshot injuries, etc., employed in the army medical departments of Great Britain, France, and the United States, and comes to the conclusion that the British system is, upon the whole, decidedly the most convenient and satisfactory. Mr. Longmore's remarks are deserving of careful study from all who are interested in military surgery; whether French and American surgeons will or will not be convinced by his arguments of the superiority of the British mode of registration, all will grant the justice of his concluding observation as to "the desirability of an agreement being come to in different countries for classifying the injuries of war, the surgical operations they lead to, and their results, on one general system; so that not only the statistics of different modes of treatment or operative interference in particular injuries in one country may be reliably compared with each other, but that the sphere of investigation and comparison may be extended, and the opportunity of making similar observations be afforded with regard to the statistics of all countries in common." In order to obtain such uniformity of registration, Mr. Longmore suggests that the subject should be referred to "an international committee of competent delegates, appointed either by the army medical departments and governments of the countries respectively concerned, or selected by societies having a corresponding professional influence in them with that which the Royal Medical and Chirurgical Society holds" in England.

---

[1] One case of disease of the pons Varolii not included.

Art. X. *A Case of Bony Ankylosis of the Knee-joint treated by Subcutaneous Section of the Bone,* by Louis Stromeyer Little, F.R.C.S., late Surgeon to the London Hospital. Communicated by T. B. Curling, F.R.S., President.—This paper describes an operation which was performed in 1868, and which appears to have been suggested by the record of several cases of angular osseous ankylosis successfully treated by Brainard's method of subcutaneous drilling, and published by Dr. S. W. Gross in the number of this Journal for April, 1868 (pp. 360 *et seq*). Mr. Little employed a chisel and mallet (as long since suggested by Malgaigne), and the result of his operation was in every respect satisfactory.

Art. XI. *On the Removal of Tumours from Bone,* by Sir James Paget, Bart., D.C.L., F.R.S., etc.—The object of this short but valuable paper is to formularize and recommend a mode of treatment, which, though it has been occasionally resorted to in individual cases, has never been recognized as an established rule of practice. The mode of treatment in question is the enucleation, or simple extirpation, of non-malignant tumours growing in bone, rather than their removal by the more sweeping operations of resection or amputation. Six cases are detailed to show the feasibility and advantage of thus dealing with cartilaginous, bony, fibrous, and myeloid tumours, growing in bone; and the paper ends with certain suggestions as to diagnosis, which appear to us so valuable, that we quote them in full for the benefit of our readers.

"For cancerous and recurrent tumours, amputation or wide resection is generally advisable; for innocent tumours growing on bones, excision; for innocent tumours growing in bones, enucleation. . . . . .

"1. The tumour is probably cancerous if its growth commenced before puberty, or after middle age, unless it be a cartilaginous or bony tumour on a finger or toe, or near an articulation.

"2. If a tumour has existed on or in a bone for two or more years, and is still of doubtful nature, it is probably not cancerous or recurrent, and this probability increases with the increasing duration of the tumour.

"3. If a tumour on or in a bone has doubled or more than doubled its size in six months, and is not inflamed, it is probably cancerous or recurrent, and this probability is increased if, among the usual coincidences of rapid growth, the veins over the tumour have much enlarged, or the tumour have protruded far through ulcerated openings, and bleeds and profusely discharges ichor.

"4. If with any such tumour, not being inflamed, the lymphatics near it are enlarged, it is probably cancerous, and still more probably if the patient have lost weight and strength to amounts more than proportionate to the damage of health by pain, or fever, or other accident of the tumour.

"5. A tumour on the shaft of any bone but a phalanx is rarely innocent, and so are any but cartilaginous outgrowths on the pelvis, or any but the hard, bony tumours on the bones of the skull. . . . . .

"When the wall of the bone can be traced over the surface, or any part of the surface, of the tumour, its growth from within is nearly certain. And so it is when, on the surface of the tumour, portions of bone can be felt among portions of more yielding substance. General smoothness of surface is usually significant of a tumour growing within a bone and expanding it, unless in the case of cartilaginous tumours, which after growing within bones, have protruded through some part of their expanded walls. Pulsation in a non-cancerous tumour connected with bone, is a nearly certain sign of growth within bone, except in the case of certain specimens of myeloid epulis; and when such pulsation is felt, it is no indication that severe bleeding will ensue in the removal of the tumour, for it is only derived from the arteries on the walls of the bone-cavity lodging the tumour.".

Art. XII. *A fourth series of one hundred Cases of Ovariotomy, with Remarks on the Diagnosis of Uterine from Ovarian Tumours*, by T. Spencer Wells, F.R.C.S., Eng., etc.—A short abstract of this paper has already appeared in the Quarterly Summary of this journal, in the number for January, 1872 (p. 264). From Mr. Wells's remarks upon the diagnosis of ovarian from uterine tumours, we select the following:—

Visible enlargement of the abdomen, as ascertained by *inspection*, is more often general in cases of ovarian, and partial in those of uterine tumour, being in the latter confined in the early stages to the lower part of the abdomen. Flattening or even protrusion of the umbilicus is common in ovarian disease, but rarely accompanies uterine tumours, unless ascites is also present. Both forms of tumour may be seen to change their position with the posture of the patient, or, when she is recumbent, during inspiration and expiration; but nearly all uterine tumours, though visibly moving above, seem to be fixed below in the hypogastric region. When a recumbent patient tries to sit up, using only the muscles of the trunk in doing so, the recti bulge forwards in front of an ovarian tumour if this be non-adherent, or if, though adherent, it be a flaccid cyst; if, however, the tumour be uterine, the solid mass fixed centrally below the umbilicus interferes with the free action of the recti.

By *measurement*, the increase in the size of the abdomen is, in the case of an ovarian tumour, usually found to be greater on one side than on the other, but in the case of uterine growths, the increase is more often symmetrical. The distance from pubes to sternum is increased in both cases, but the increase in the distance from pubes to umbilicus is proportionately greater in the case of uterine tumours.

By *palpation*, the fluid part of an ovarian growth is commonly found to be in excess of its solid portion, the reverse being observable in the case of tumours involving the uterus. An ovarian tumour can usually be raised considerably, and the hand can sometimes be pressed backwards between the tumour and the pubes, almost to the brim of the pelvis; this can rarely be done in the case of a uterine growth.

By *auscultation*, distinct vascular murmurs of a tubular or vesicular character are not unfrequently observed in the case of uterine growths, but such a murmur in connection with an ovarian tumour is excessively rare.

The diagnostic marks to be observed in examination by the rectum and vagina are clearly indicated; a vascular thrill, like that of varicose aneurism, is regarded by Mr. Wells as peculiar to uterine growths, though an abnormal arterial impulse may be felt in either class of tumours.

Art. XV. *On a simple Method of removing Silver Wire employed in Cases of ununited Fracture*, by Francis Mason, F.R.C.S., etc.—Mr. Mason's plan is to pass a needle through the fragments and secure them with a loop, or figure-of-8, of silver wire, as in the operation for hare-lip, or as in Simpson's third method of acupressure. When the needle is withdrawn, the wire of course readily follows.

The present volume of the Transactions, which fully sustains the reputation of the series, terminates with an elaborate index, arranged on the same principles as the recently published general index to the first fifty-three volumes.

J. A., Jr.

## ART. XX.—*Obstetrical Transactions.*

1. *Transactions of the Obstetrical Society of London.* Vol. XIII. For the year 1871. 8vo. pp. 325. London: Longmans, Green, & Co., 1872.
2. *Transactions of the Edinburgh Obstetrical Society*, Session 1868–69. 8vo. pp. 207. Vol. I. Edinburgh: Maclachlan & Stewart, 1870.

IT is impossible, in the space allowed for a review, to give a full account of the numerous papers contained in these two volumes. We shall, therefore, restrict ourselves to the selection of the more important.

The London Society has an "ordinary" fellowship of nearly 600, an income of some $3500, and holds ten sessions in the year. It is gradually accumulating a museum, library, and building-fund, and has a world-wide reputation for activity and energy. The volume of its transactions before us is much less in size than some that have preceded it, and opens with the Annual Meeting in January, at which Dr. Graily Hewitt, the retiring president, delivered the Annual Address, and Dr. J. Braxton Hicks was chosen his successor.

Dr. Hewitt's address congratulates the Society upon its prosperity; contains obituary notices of several members deceased during the year; and reviews the work of the Society.

*Spontaneous Rupture of an Ovarian Cyst; reported with specimen*, by Dr. PROTHEROE SMITH.—Woman, single, aged 48, bowels obstinately constipated; fibroid tumour of uterus, and ovarian cyst diagnosed. Patient seized with severe abdominal pains, followed by vomiting, collapse, and death. . . . Flaccid ovarian cyst of right side, ruptured at a point covered by a globular fibroid tumour the size of a small orange, rising from left angle of fundus uteri. Cyst and pelvic viscera bound down by adhesions, the result of peritonitis. Dr. Smith exhibited specimen in evidence of the necessity of performing ovariotomy early under similar circumstances.

"Dr. Barnes observed that there was another mode of dealing with very early ovarian dropsy, from which good might be expected," and reported a case in which he had drawn off sixteen ounces of fluid, verified as ovarian, by means of the Aspirateur of Dieulafoy, the trocar being introduced by the vagina. "Improvement followed, and the uterus retracted to its natural position. In three weeks, the bladder distress, which existed prior to the operation, returned, and it was found that the uterus was again pushed forward by the tumour. It was tapped a second time, and six ounces of fluid came away; six drachms of tincture of iodine were thrown into the cyst. The patient was again better; no marked local symptoms followed. Some weeks later, a firm mass was felt in the place of the original swelling; and as the uterus was more forward than natural, it was resolved to puncture again, in the hope that, by letting off any little exudation in it, complete shrivelling of the cyst, and a cure, might be effected. But soon afterward, symptoms of irritative fever set in, attended latterly by jaundice, under which the patient sank after some weeks. Notwithstanding this issue, he thought the method deserved further clinical investigation.

Dr. Phillips referred to an American physician who advocated; and Dr. Wiltshire remarked that he believed had performed, successfully, the operation of ovariotomy through the posterior wall of the vagina. . . . [This physician was Prof. T. Gaillard Thomas, of the College of Physicians and Surgeons, New York, and the operation was performed February 6, 1870, terminating in entire success. See this Journal for April, 1870, page 387.]

*Irritable Bladder in the Latter Months of Pregnancy.*—Dr. W. S. Playfair refers to this sometimes distressing condition, and says :—

"I believe that this form of irritable bladder is mainly due to a distinct mechanical cause, viz., an oblique or transverse position of the fœtus in utero, and that it is easily and effectually cured by the simple expedient of altering the position of the child by means of external pressure on the uterus." He reports three cases in illustration, in one of which he several times altered the position of the fœtus to the great relief of the patient, the change not being permanent, as it appears to have been in the others, who were all equally benefited for the time, by the altered position of the fœtus.

Dr. Barnes proposed retaining the fœtus *in situ* by mechanical means. "Dr. Hewitt was at a loss to account for the irritation by the pressure of the fœtus on the bladder, because the head in the ordinary position would press quite as much as a shoulder, if not more, and that against the most irritable portion of the bladder, namely, the lower portion. He would suggest another explanation—the disturbance to the form of the bladder by the altered form of the uterus. It is well known that the vertical diameter of the bladder is increased, and its antero-posterior decreased, in the latter months of pregnancy; may not this arrangement be interfered with so as to produce the symptoms complained of?"

[As a matter of interest in this connection, we will state that one case of this form of irritability that came under our care, aborted at seven months, of an anencephalous fœtus. The lady was the mother of several children, and never had suffered to the same degree before, even upon the last days of full gestation.]

*Remarks on Tables of Mortality after Obstetric Operations*, by Drs. J. Braxton Hicks and J. J. Phillips.—This paper, covering thirty pages, being itself condensed, the facts only can be stated, and deductions which were drawn from them. 1. *Craniotomy.* Smellie reports four fatal out of forty-four. Ramsbotham gives seven fatal cases. "Many of the conditions out of which it was endeavoured to rescue the patient were severe enough in themselves to be fatal, or at least seriously to endanger her life." "It will be observed that, out of the seven cases of Ramsbotham, rupture of the uterus occurred in two, and rupture of the vagina in two, and that in each of these cases the fatal accident had happened previous to any attempt at delivery. In two other cases, death resulted from sloughing, caused, as is evident from the history and the already decomposing fœtus, by the long continuance of unassisted labour. The remaining fatal case must be considered as altogether exceptional." Dr. Collins reports fifteen fatal cases. "When we analyze these fifteen cases of death after the employment of craniotomy, we are at a loss to find more than two whose fatal termination can with any show of probability be traced to the operation. In most of the cases, it will be admitted by all that death arose from the too long postponement of craniotomy." Dr. Robert Lee reports sixty-seven cases, eleven of them fatal. The remarks here have the same bearing as in the former instances, and so on to the end of the paper, including the results of the use of the forceps, and the employment of version; showing the unreliability of statistical tables in establishing the mortality to be anticipated from these operations, from the fact that the complications of delay, rupture of uterus, succession of instrumental expedients, etc., increase the mortality in the various cases, which cannot be properly associated under one head, either as forceps cases, craniotomy, or version. The whole paper is one well calculated to show the fallaciousness of the tables upon which the statistics of mortality, after the obstetric operations referred to, have been based. The remarks of Dr. Phillips at the close of the discussion which followed the reading of the paper, will make a suitable explanatory ending to the imperfect sketch here given. He said that he was pleased to find that the general experience of the Society declared in favour of the belief expressed in the paper, that the mortality after obstetric operations in a large proportion of cases was wrongly attributed to the operations themselves. Probably many accoucheurs were influenced in delaying instrumental assistance by the high rate of mortality assigned to craniotomy, or the use of the forceps. The practical lessons were easily deduced, but with these, Dr. Hicks and himself were not on that occasion specially concerned; their chief object was to prove the unscientific manner in which the ordinary tables of mortality had been compiled, and to call attention to the wrong conclusions which had been drawn from them.

Extensive researches into the history of the Cæsarean operation, as performed in this country, have led the writer of this to a similar conclusion, the mortality being due less to the gravity of the operation than to all the accompanying circumstances of delay, fruitless attempts at instrumental delivery, etc.

*A Case in which the entire Ovum was expelled at the seventh month, and the Child rescued alive*, by Dr. JOHN BRUNTON.—The woman, aged 32, had previously given birth to four children, and on the occasion reported, which was in December, aborted of twins, the second being inclosed in the membranes for a period of time calculated at about fifteen minutes, before they were opened, when the child cried, and appeared in a better condition than the first: both died the following day, the second living much the longer of the two.

This report has a bearing upon the subject of intra-uterine fœtal independence, and especially upon the possibility of saving the child in placenta prævia after practising the method of Simpson in separating the placenta for the arrest of hemorrhage. Dr. Brunton states that in a case under his care the child was saved after the placenta had been removed and upon the bed for ten minutes.

*The Vomiting of Pregnancy, its Causes and Treatment*, by GRAILY HEWITT, M.D.—The purport of this article of nineteen pages is as follows: He says, "Having had occasion to treat cases of sickness in young unmarried women suffering from flexion, it has been observed by me that when those patients marry and become pregnant, the sickness observed is liable to be unusually severe and troublesome. Regarding the cases which have come to me in the course of consultation practice, and where the symptoms of sickness have been still more troublesome, the same fact holds good, the connection between the two things has been observed to exist." He relates a typical case in which anteflexion was the cause of trouble, which was relieved by placing the woman upon her back in bed, and confining her to this position, "in order to allow the expanding uterus a better chance of escaping from the pelvis, and that the bowels should be kept regularly open." He says in explanation, "the tissues of the uterus, including the nerve ramifications in it, are compressed at the seat of flexion, and this is the cause of the sickness." He recommended the use of pessaries as a means of cure.

"Dr. Barnes observed, there had been many theories advanced as to the cause of vomiting in pregnancy. Displacement of the uterus, as retroflexion and anteflexion, was an old theory. It was mentioned by Moreau; and Mayer and Ulrich give cases in which anteflexion was the cause." "He was in a position to state, from many precise observations, that flexions of the gravid uterus were often present without any unusual degree of vomiting, and that the most obstinate vomiting occurred where there was no flexion." He believed in the theory of the stretching of the uterine fibre, as set forth by Bretonneau of Tours, and brought forth in evidence the facts of vomiting resulting from intra-uterine polypus; the injection of water to induce labour; the rapid accumulation of an excess of liquor amnii: and the existence of twin pregnancy.

His theory was, that "growth that kept pace with that of the contents of the uterus did not cause vomiting; but it was caused whenever the fibre was stretched rapidly, the distending contents outrunning the accommodating growth of the uterus.

In a long-continued criticism which followed, the views of Dr. Barnes were generally concurred in, and the employment of pessaries for mechanical support condemned as unsafe.

*Case of Cæsarean Section*, by HENRY GIBBONS, M.R.C.S.—The subject was 3 feet 10 inches high, 22 years old, and in labour five hours. The steps of the operation were all favourable, the incision having been made prior to the rupture of the membranes, and everything bid fair for the recovery of the patient. Chloroform was employed during the operation, and in about an hour a full dose of opium was administered. "Uncontrollable vomiting commenced soon after, and continued with scarcely any intermission till she sank, the morning of the 15th January, or about forty hours after the operation." The examination of the body showed neither extravasation into the peritoneum, nor any peritonitis. The child lived nine days.

We would ask whether death resulted as a secondary effect of chloroform, or immediately, from the operation? In the reviewer's table of sixty American cases, there is no parallel instance of death. The vomiting followed too quickly the dose of opium to have resulted from it.

*Case of a Child born at twenty-two weeks and two days, living for eighteen days after Birth.*—The mother was 38 years old, had had nine children and three miscarriages, and the date of the conception noted appears to be well established. The fœtus was a male, and the testicles had not descended into the scrotum. Dr. C. H. F. Routh, who reports the case, mentions that of one born living at four months; another reported by Maissonneuve as respiring for six hours at four and a half months; and a third by Mr. Smyth, twelve hours, at five months. We may add another in our own experience, similar to the last, born of a woman far advanced in phthisis.

*On Tetanus after Abortion*, by ALFRED WILTSHIRE, M.D.—This is the title of an article covering six pages, founded upon two cases which are reported, in both of which there existed great mental depression, one arising from the fact of the conception being adulterous, and the other from cruel desertion by her husband. This is a subject of considerable interest, although of little practical value, as the disease is of great rarity in temperate climates. In hot countries where traumatic tetanus is not uncommon, puerperal tetanus is also frequently met with.

Dr. Playfair remarked that he had seen many cases in the Lying-in Hospital at Calcutta, even when there was nothing otherwise abnornal about the patient which would favour its occurrence.

*On Pelvic Hæmatocele, with special Reference to its Diagnosis and Treatment*, by Dr. ALFRED MEADOWS.—This article and its discussion constitute a valuable treatise upon this form of disease. There appears to be a considerable difference of opinion as to the frequency of the malady, its diagnostic features, its extremes of gravity, and the necessity or propriety of evacuating the blood through the vagina or rectum. It is impossible to make a satisfactory summary of the mass of evidence, suffice it to say, that it leaves the impression that a careful tactile and symptomatic diagnosis would reveal the existence of the disease in mild, as well as its graver forms; and experience is in favour of evacuating the fluid where it is large in quantity, not very recently effused, and is producing by its presence severe constitutional and local disturbance. There is abundant evidence to show that the peritoneal cavity is much more tolerant of the presence of blood than of any other extraneous fluid, and rarely exhibits the signs of peritonitis as a consequence of its effusion. In retro-uterine hæmatocele the blood in time becomes encysted in some cases, and subsequently undergoes a change by which it is rendered putrescent, and a source of constitutional irritation, when it is well to liberate it by puncture.

We have seen the peritoneal cavity so largely filled with blood, that its loss from the circulation reduced the patient apparently to a moribund condition, and still there was no peritonitis resulting from its presence, or symptoms requiring its evacuation: the lady recovered her health perfectly, and several years subsequently gave birth to a healthy infant.

Dr. Robert Barnes remarks: "My own observations lead me to the opinion that the true indications for puncture are constitutional evidence of blood-poisoning from alteration in the blood-mass of the tumour; or distressing pressure upon the bladder and other pelvic viscera; and that in those cases where there is no evidence of such conditions the prospect of recovery is in no sensible degree enhanced by puncture, and that the practice, therefore, is to be shunned simply because too much diligence is bad."

Dr. Protheroe Smith recommends that the fluid, when evacuated, should be drawn off by the aspirator, and says of its use in one case: "By it every particle of matter and gas was sucked out so completely that perfect collapse of the sac took place, there was no reformation of pus, and the patient left the hospital apparently perfectly well."

*On a Case of Sudden Death seventeen days after Delivery*, by Dr. W. S. PLAYFAIR.—The subject was a healthy lady 30 years of age, primipara, and delivered after a short and easy labour. Convalescence progressed favourably until the tenth day, when fever, embarrassed respiration, and physical signs of pleurisy resulting from exposure to a draught, appeared. On the fifteenth day was apparently perfectly restored. On the seventeenth day ate a hearty breakfast and was anxious to get up: about noon, suddenly, whilst sitting up in bed, was attacked with cardiac pain, great dyspnœa, became livid in countenance, and was dead in about five minutes. No autopsy. Dr. Playfair remarks in explanation of the cause of death: "The slight pleuritic attack had produced an increased hyperinosis of the blood, over that already existing from the alteration due to the puerperal state. Hence the coagulation, which probably might not have occurred had it not been for the apparently trivial and temporary pleuritic mischief, which, under ordinary circumstances, would have given rise to no anxiety.

*On the Diagnosis of the least known Varieties of Uterine Inflammation*, by Dr. E. J. TILT.—This article, with the ensuing discussion, cannot from its nature be reproduced in abstract form. It is a paper of much value and well worthy of examination: the author condemns the effort made by Dr. Routh, to distinguish fundal endometritis from internal metritis.

*On the Contractions of the Uterus throughout Pregnancy; their Physiological Effects, and their Value in the Diagnosis of Pregnancy*, by Dr. J. BRAXTON HICKS.—In this well-written article the author gives the results of his examinations of the gravid and otherwise enlarged uterus, through the abdominal walls, during a period of eight years, and establishes the fact of the continued recurrence of contraction and relaxation in the muscular fibres of this organ during the last six months of pregnancy particularly, but in all cases, where it is distended to a large size by any internal growth.

Dr. Hicks remarks:—

"If the uterus be examined without friction, or any pressure beyond that necessary for full contact of the hand, continuously, over a period of from five to twenty minutes, it will be noticed to become firm at first, and more or less flaccid, if it be firm at first. It is seldom that so long an interval occurs as that of twenty minutes; most frequently it occurs every five or ten minutes, sometimes even twice in five minutes. However in some cases I have found only one contraction in thirty minutes." . . . "The constancy with which these contractions of the uterus have always occurred to me, leaves no doubt on my mind but that it is a natural condition of pregnancy irrespective of external irritation." "In a general way the pregnant woman is not conscious of these contractions. But occasionally it happens that the uterus is more than usually sensitive, and that the contractions are accompanied by pain; and then on examination it is found that each pain she complains of is coincident with a contraction."

"Again, when the uterus has been excited by any cause, and these contractions are more than usually powerful, the woman is conscious of their presence, and by watching these we shall convince ourselves that the contractions which were before unnoticed by her, are really the same as the so-called *pains* of premature expulsion of the fœtus and also of true labour."

These remarks of Dr. Hicks remind us of a case in which this condition existed almost to the extent of expulsion. The patient was the wife of a physician, and was pregnant the second time, having miscarried with her first child, which lived but three days. When we were called to see her in July, 1864, we found that she had been suffering with recurrent painful contractions of the uterus for some days, which her husband had not succeeded in controlling. She had had no discharge per vaginam, although her symptoms closely resembled those of actual labour. When the hand was placed upon the abdomen, the contraction and relaxation were very distinctly noticeable in the walls of the uterus at each recurrence; and the expression of the woman alternately indicated pain and relief. Under the use of morphia the action of the uterus gradually diminished, until at the end of ten days she was entirely relieved. She was delivered of a living child in October. The painful contractions in this case continued altogether about three weeks.

Dr. Hicks proposes to make a practical use of this habit of the uterus, to distinguish it when enlarged from non-uterine tumours, and to detect the presence of abnormal intra-uterine growths and fluid collections by the comparative differences under palpation of the contracted and relaxed pregnant uterus; and the state under similar conditions, when distended by solid tumours, hydatids, and fluid accumulations.

*Abstract of a Memoir on Osteomalacia, by Dr. Gaetano Casati, of Milan,* by Dr. Robert Barnes.—Although this disease is almost unknown in the United States, it will be of interest to introduce a portion of this paper as explaining the reasons for the prevalence of the malady in some European localities, and per contra, its non-existence in any special district here.

Dr. Casati gives the experience of eight years in the Royal School of Midwifery at Milan, during which period 7719 women were delivered, of whom 62 presented evidences of clearly-marked osteomalacia.

"Almost all the women came from that part of the province of Milan known as the Valley of Olona. All the women came from wretched villages where food was scarce, consisting for the most part of maize or rice, often musty; they worked at washing or weaving; were badly lodged, their rooms being ill-ventilated, out of repair, the glass of the windows generally substituted by paper; the houses built upon clay, and damp. Added to these unhappy conditions, Casati thinks the character of the water and the vegetables with which the people eke out their scanty diet is largely concerned."

Only one of the 62 women was a primipara, and excepting five, all had had three children, or more: 41 presented various degrees of pelvic deformity. One-half of the women were delivered normally, and of the remainder, but five required the reduction of the fœtal head, and two, the operation of Cæsarean section; 42 children survived.

It will thus be seen, that until we have a wretched, ill-fed, crowded peasantry in the United States, living in damp localities upon the ground, we are not likely to meet with osteomalacia, except in very rare instances; and that it is only in the minority of cases that destruction of the fœtus or the Cæsarean operation is required.

*A Case of Extra-uterine Gestation, with Remarks on the Treatment of that Condition*, by Dr. ALFRED MEADOWS.—This article presents the simple record of a case of abdominal pregnancy, in which a young woman died from rupture of the cyst and consequent internal hemorrhage, without any attempt having been made to prevent the occurrence of this accident. Dr. Meadows reflects somewhat upon himself for not having anticipated the event by the operation of gastrotomy, and proposes in such an operation to tie the fœtal cord and leave the placenta, instead of running the risks of hemorrhage by its detachment. The reading of this paper provoked a lengthly discussion upon the subjects of the diagnosis of extra-uterine pregnancy, its dangers, spontaneous cures, and the propriety and methods of surgical interference: from which it may be inferred that they thought it proper to open the abdomen in cases where rupture had already occurred, and would also recommend the anticipatory operation if the diagnosis was not so uncertain, and patients did not sometimes recover by calcification of the fœtus, or its discharge by abscess and ulceration into the vagina, rectum, or through the abdominal walls. The great obstacles to the early operation, as expressed by Drs. Hewitt and Playfair, are, the difficulties of satisfactory and certain diagnosis; the fact that cases rarely present themselves until too late for gastrotomy as an anticipatory measure; the difficulties to be met with in the form of extensive adhesions; and the dangers of uncontrollable hemorrhage. Dr. Meadows took the bolder plan, and recommended the abdominal section as soon as the diagnosis could be clearly established, regarding it as less dangerous in the average, than waiting the course of nature.

*Successful Case of Ovariotomy during Pregnancy, with Remarks on the Treatment of Ovarian Tumours complicating Pregnancy*, by EUGENE GODDARD, L.R.C.P.; operation by Spencer Wells.—The subject was a lady 29 years old, pregnant for the sixth time, and about two months advanced at the date of the operation. Incision five inches long; eleven and a half pints of fluid removed; weight of cyst and solid matter three and a quarter pounds. Total about fifteen pounds. Anæsthetic used, chloro-methyl. Recovery from operation rapid and complete; patient went to full maturity; labour natural; able to nurse her infant, and in as good health as after previous confinements.

In his defence of the operation during gestation, Dr. Goddard remarks:—

> "Ovariotomy, now an accepted operation, has had to fight its way through more opposition and bitter prejudice than perhaps any other. Sufficient facts have, however, been accumulated to establish it now as one of the triumphs of modern surgery. But it seems that a new development is open to it. The peritoneum, it is settled, may be invaded under certain careful precautions, perhaps the most important being that no ovarian fluid be allowed to escape into its cavity; or if it do, that it be carefully removed. May we not now say the peritoneum may be safely invaded under like conditions during pregnancy? Or if it be objected that the cases are still too few to warrant such a conclusion, may we not say that the tendency of the cases on record, is to prove that ovariotomy has been thus far so good an alternative that it is only necessary in

should be followed up to become established as in many cases the *best* alternative in this complication?"

"The President remarked that in the case of a compound or solid cyst, if relief must be given, then the choice lay between induction of labour and ovariotomy. The cases of Mr. Spencer Wells showed, so far as they went, that the results of the latter had been satisfactory, and no doubt in his hands the question would receive an intelligent solution."

*Fibrous Enlargement of the Uterus successfully treated by Ergot*, by Dr. John Brunton.—Subject, a single woman of 47; fair complexion, and in full flesh. Uterus when first examined reached midway between pubes and umbilicus. Menses excessive, and periods about every two weeks. Treated at first by iodine to abdomen, and bromide of potassium internally, but with no benefit; then with digitalis, morphia, cannabis indica, and finally ergot. The hemorrhage becoming alarming, and the uterus reaching as high as the umbilicus, the ergot was administered in large doses, as much as from one to two ounces being given at each period, with controlling effect. The uterus began to diminish in size under this treatment, and in six or seven months could not be detected above the pelvis, and there was little or no increase in its size, examined by the rectum. She is reported to have taken from forty to fifty ounces of ergot in six months, and to have had morphia injected hypodermically very often, sometimes daily. At last report, the catamenia were still frequent and excessive, but under control by ergot and morphia; no enlargement of the uterus could be detected.

2. *Edinburgh Transactions.*—The Edinburgh Obstetrical Society was instituted in 1840, but did not publish its transactions in book form until 1870, at which time there were 109 "Ordinary," and 105 Corresponding Fellows upon its roll. The work opens with a monograph of fourteen pages entitled:—

*On the Construction of the Cephalotribe*, by Dr. J. Matthews Duncan, M.D.—This article is intended to point out the errors in the construction of the short handled, or Edinburgh instrument (Sir James Y. Simpson's); and institute a comparison between its efficiency and that of the Paris instrument (a modification of Baudelocque's). Dr. Duncan made a series of experiments upon the relative powers of the two instruments, and condemns the short handled variety as deficient in leverage; not shutting the blades closely enough before the handles are brought in contact; and having too much spring in the former, without there being any compensation in the set of the handles, which should pass over each other. He recommends a slight modification of the Paris instrument, giving it a strong button-pivot, thin but broad handles, and a free passage of the latter over each other, so as to allow the screw to be turned until the handle ends are in close contact, thus reducing the weight from 4 lbs. 1 oz. to 3 lbs. 5 oz., without diminishing the necessary strength of the cephalotribe.

The reading of this paper occasioned a considerable discussion, parties admitting the value of many of the views advanced by Dr. Duncan, but at the same time claiming an efficiency in the Edinburgh instrument far beyond what he had apportioned it: Dr. Keiller stating that he had repeatedly used the condemned cephalotribe, and had had no great difficulty in crushing the fœtal head with it. The general impression appears to have been, that the instrument of Dr. Duncan was still unnecessarily cumbersome.

*Notes of a Case of Puerperal Mania*, by Dr. Menzies.—This is chiefly valuable as an instance of the effect of bromide of potassium, the patient having taken four ounces during six weeks, with an intermission of eight days. The notes of the case from day to day do not show any very satisfactory effects from the remedy. Dr. Wilson thought that the recovery of the patient had not been more rapid than many cases of mania treated without the bromide.

Dr. Ritchie mentioned a case in which the bromide failed, the patient became much reduced, would take no food, and ultimately died. He held the opinion that puerperal mania was in most instances the result of nervous exhaustion and required a stimulating treatment.

*Birth of a Child weighing Seventeen Pounds*, by PETER BROTHERSTON, F.R.C.S.E.—The mother was five feet high, aged 40, and in labour with her seventh child. The head came away normally, but the body could not be delivered by manual assistance, and the child perished before it was finally removed by the blunt-hook. Length of fœtus, 23½ inches; occipito-frontal circumference, 15 inches; circumference of shoulders, 20; chest, 15½; abdomen, 17; funis to head, 13; to sole of foot, 10½. Length of arm, 10 inches. The child was perfectly formed in every respect. The father was 44, six feet high, and weighed 182 pounds. So much force was required in delivering the body of the child, that its right humerus gave way near the neck under the pressure of the blunt-hook.

*How long may a Dead Fœtus remain in the Uterus?*—This question is propounded by Dr. JAMES YOUNG, who relates the case of a woman æt. 36, mother of four children, who, becoming insane, was sent to an asylum, where she in a measure recovered, returned home, conceived, was recommitted for three months, after which she became well, and so continued. She became pregnant during six days when at home in January, and was not again home until April, felt the motions of the fœtus until the end of June, after which there was no more motion or increase of size, and breasts became small and flaccid. Fœtus expelled in September, putrid, and inclosed in the membranes; measured when extended, ten inches. Dr. Young computes the age of the fœtus at its death at five calendar months and ten days, and that the mother continued to carry it two months and ten days longer, without any detriment to her health.

Mr. PRIDIE reported a case in which he made the calculation that more than three months had expired between the death of the fœtus and its expulsion. The fœtus died from the effects of fear, excitement, and over-exertion on the part of the mother in escaping from a party of cavalry on drill.

*Transverse Contraction of the Inferior Straight; Caries of Ischium, with Sequestrum projecting into Vagina; Cephalotripsy, and Recovery*, by Dr. PAUL GRENSER, of Dresden.—Woman unmarried, æt. 20; four feet three inches in height. Tubera ischii closely approximated, scarcely admitting two fingers; one inch above the vulva a splinter of bone, about an inch and a quarter long, was found projecting into the vagina, and arising from the ascending ramus of the right ischium. This bone was removed without hemorrhage; labour continued sixty-eight hours before full dilatation of os uteri was effected. Forceps then applied, which occasioned considerable hemorrhage, supposed to come from the carious ischium; head drawn down, perforated, crushed with cephalotribe of Busch, and child delivered. Woman left the hospital on the ninth day. This carious condition of the pelvis had existed from the age of seven, at which time of life she had vaginitis, purulent discharge, and subsequently escape of fragments of dead bone. For nine years prior to her labour, the discharge had been slight. The inferior straight measured 3 inches 4 lines antero-posteriorly, and 2 inches 2 lines between the tubera ischii.

*Caoutchouc Dilator.*—Dr. KEILLER remarked: "The mode of inducing premature labour by means of caoutchouc bags was first brought before this Society (as reference to its proceedings will prove), and several Fellows now present had been made practically conversant with this plan before it was adopted by the gentleman whose name it now generally bears."

Sir James Simpson and other members replied, that if any name ought to be attached to this special mode of practice, it was unquestionably that of Dr. Keiller, and not of Dr. Barnes. It was only fair to Dr. Keiller and to the Society that this should be known and acknowledged.

*Tetrachloride of Carbon.*—Two cases of labour reported by Dr. INGLIS, in which this anæsthetic was used. First patient took it undiluted, resulting in violent uterine action in first stage of labour, and syncope under its full impression. In second case (one of uterine inertia), given with an equal portion of chloroform, resulted in bringing on effective expulsive action at once.

Sir James Simpson found that it depressed the pulse, but did not find it produced syncope; had used nitrite of amyl, but it did not succeed in labour, although a pain-reliever in dysmenorrhœa, cancer, headache, etc.

*Spontaneous Healing of Harelip in Utero.* Case reported by Dr. CUTHBERT.—Scar well marked on both sides of lip, soft palate fissured. Child being at age of three months when reported.

*Complete Separation of the Placenta before Labour without external loss of Blood.*—Dr. JAMES CAPPIE reports two cases where apparently the whole placenta had become suddenly detached from the inner surface of the uterus. The first accident happened as the woman was getting out of bed in the morning, in the seventh month of her pregnancy, having been aroused by severe abdominal pain. She was delivered as soon as practicable with the forceps. The placenta was remarkably soft, and the child affected with general anasarca. The mother was pale and delicate, but had no albuminuria. The second patient was in excellent health, and like the other in her fifth pregnancy, but advanced about seven and a half months, was seized suddenly, without assignable cause, with abdominal pain followed by giddiness and fainting, and upon recovering consciousness experienced a sensation of increased distension. Os uteri found closed; no evidence of labour; forcibly introduced the finger and commenced dilatation, but without separating the membranes to any extent; labour excited, advanced rapidly; child delivered in a flaccid, anæmic state in less than two hours. Placenta presented a tear in its centre, but was otherwise healthy. Both women recovered. The reasons given for believing in the entire separation of the placentæ were, that in both cases they were extracted before any clots were discharged; were found low in the vagina, and the membranes inverted by the gush of discharge, carrying the placentæ in advance. The external character of the uterus under palpation, in both instances, appears to have given evidence in favour of entire separation, a very rare condition as compared with the number of cases which are only partial.

*Cephalotripsy after Turning*, by Dr. KEILLER.—In this case the woman was in her second labour, the first having been terminated by instruments after several days' suffering. Dr. Pridie was engaged to attend her with the second, and called in the aid of Dr. K. Turning was resorted to in preference to craniotomy, in the hope of possibly saving the child, but when the body was extracted the impossibility of delivering the head entire was discovered; it was then perforated, the body slowly drawn upon, and pressure made upon the head from above the pubis, when at the maximum of effort the body separated at the neck. Forceps, crotchet, craniotomy forceps, and cranioclast were tried in succession, but failed. The cephalotribe of Simpson was then obtained, and the head crushed and removed. The woman made a good recovery. Dr. Keiller advocates the "Edinburgh Cephalotribe," as that of Prof. Simpson is generally called, in preference to the longer and heavier modifications of Baudelocque.

*On the Scarification of the Gums of Infants in Dentition*, by Dr. CAIRNS.—This article is an effort to prove that the operation does not relieve pain, remove tension, prevent or check convulsions and diarrhœa, and is a preventive of the subsequent ready protrusion of the tooth by the formation of a dense cicatrix. In the discussion which ensued the current of opinion was decidedly against him, the only concession made being that the operation was performed oftener than there was any occasion for.

*On the Combined External and Internal Method of Version*, with cases, by Dr. ALEXANDER MILNE.—This article is written in advocacy of the method of delivery by the feet, instead of the use of the forceps, Dr. M. believing from his experience of forty cases of version by the old method, that under chloroform, the operation is attendant with very little danger. He recommends in cases where the os is rigid, or but slightly dilated, and especially where the membranes are intact, that the bi-manual method of Braxton Hicks should be employed. He reports four cases in which he used the combined method. The first, Presentation of head and funis—version readily accomplished before rupture of membranes. Second, Moderately contracted pelvis, woman delivered once by forceps, and twice by turning; os small and rigid, version as before, but more difficult, as the amniotic fluid was believed scanty, and the abdominal walls were greater in thickness. Third, Placenta prævia with profuse flooding—version accomplished mainly by external pressure, woman and child saved. Fourth, Convulsions, no labour-pains, used forcible dilatation with fingers, version before rupture of membranes, both saved.

*On the Use of the Chlorate of Potash in Certain Cases of Pregnancy*, by Dr. CUTHBERT.—Case reported where five abortions had occurred in six years after marriage, in all of which the placentæ were diseased except one, in which the labour was induced by a fall at the sixth month. In a sixth pregnancy was kept much of the time in a recumbent position, and under the effects of the chlorate of potash: gave birth to a healthy child.

In the discussion which ensued, much credit was given to the chlorate, in similar cases. Sir James Y. Simpson had used it in many instances, and recommended it in doses of ten to twenty grains three times a day, combined with rest.

*Consecutive Malformation.*—As an instance of this, Dr. Menzies reports three successive births of children affected with spina bifida, the offspring of the same mother. The reviewer has a patient whose first and second children are hypospadiacs, and whose only sister has a son similarly malformed. It is not hereditary in either instance.

*Ovarian Cyst ruptured by Accident, resulting in Cure*, by THOMAS L. M'-MILLAN, L.R.C.S.E.—The subject was single, aged 42, labouring under chronic bronchitis, emaciated and somewhat cyanotic, case deemed very unfavourable: was knocked down and injured by a runaway horse attached to a cart; taken up insensible, and remained unconscious for several days; upon recovering her senses, found abdominal tumour had disappeared. After being confined to bed six weeks, and suffering with a severe cough, she entirely regained her health in every particular, and was permanently cured of her dropsy.

*Two Cases of Convulsions during Dentition arrested by Scarification of the Gums*, by G. STEVENSON SMITH, L.R.C.S.E.—This is an answer to the paper by Dr. Cairns, previously quoted, taking an entirely opposite view of the value of scarification, and giving cases in evidence of its power to arrest convulsions, relieve pain, etc. His opinions were sustained by the views and experience of the several Fellows who took part in the discussion of the question.

R. P. H.

## Art. XXI.—*Transactions of American State Medical Societies.*

1. *Transactions of the Iowa State Medical Society; from May,* 1867, *to April,* 1871, *both dates inclusive.* 8vo. pp. 272. Davenport, 1871.
2. *Transactions of the Medical Society of the State of California, during the Years* 1870 *and* 1871. 8vo. pp. 252. Sacramento, 1872.
3. *Transactions of the State Medical Society of Michigan, at its Fifth Annual Session, June,* 1871. 8vo. pp. 64. Lansing, 1871.

1. The volume before us is the first of the *Transactions of the Iowa State Medical Society* that have appeared. It comprises, in addition to an abstract of its proceedings at its several annual sessions from May, 1867, to April, 1871, both inclusive, a selection of the papers and reports read before the Society at these sessions respectively.

The opening Address of the President, J. W. H. Baker, M.D., at the session of 1867, presents a brief notice of the change, which of late years has taken place in the treatment of acute diseases; of the prevalence of criminal abortion; of the subject of female practitioners of medicine; of the evil resulting from newspaper advertisements recommendatory of patent medicines, nostrums, and specifics for the cure of every ailment incident to the human frame.

The Presidential Address, delivered at the session of 1868, by Wm. Watson, M.D., is mainly taken up with a notice of the past history and progress of the Iowa State Medical Society; the difficulties, the results that have been already accomplished by its agency, and its present prospects for the future.

The Address of the President, P. Harvey, M.D., at the session of 1869, presents a well-drawn up, and interesting sketch of the "Climatology of Iowa," more especially of its southern portion.

The Presidential Address, delivered by S. B. Thrall, M.D., at the annual session of 1870, has reference mainly to events connected with the medical profession in Iowa.

The first paper read at the session of 1867, was an account of a "Misplaced Ovary," by Dr. E. Whinery. May, 1867, an unmarried female, 26 years old, consulted the doctor in regard to an apparent cyst or tumour, in her left labium. When she first noticed it, it was about the size of a large bean. About six months afterwards it began to grow, and recently had increased in size up to that of a walnut. It was firm to the touch, and interfered somewhat with the act of walking; it could be moved backwards toward the posterior commissure. Extirpation with the knife was advised, and after a short delay submitted to. Dr. W., with a sweep of the scalpel, in the line of the labium, laid bare the tumour, which had a tunic similar to the *tunica albuginea testis*, and an envelopment corresponding with the *tunica vaginalis testis*. These being incised, a misplaced ovary was turned out, of a kidney shape, with a pedicle proceeding from its pelvis. The pedicle was ligated and divided. The length of the ovary thus detached was two inches, its width an inch and a half, its thickness one inch. The wound healed mostly by the first intention. The ligature came away in six days, leaving a small fistulous opening, from which a semi-purulent matter was, for some six weeks, occasionally discharged. It is uncertain at what period of life the ovary had descended through the inguinal canal, but it was probably during early infancy. The patient stated, a year after the operation, that her catamenial discharge amounted then to only one-half the quantity it did formerly. She remains a fine healthy woman, still unmarried.

Next is the report of a rather rare case, in which four successful operations for the removal of stone from the bladder were performed by the bilateral method at comparatively short intervals. The report is made by Professor J. O. HUGHES, M.D.

Dr. E. WHINERY relates what he terms "A Novel Case of Lithotomy." In the latter part of November, 1866, a man, supposed to be labouring under stone in the bladder, was operated on by the lateral method, by Dr. WHARER. The incision was made carefully but boldly, in view of the supposed large size of the calculus. The entrance of the knife into the bladder was not followed, as was expected, by a free gush of urine, nor until search was made for the stone. Upon introducing the finger, it was ascertained that there was but apparently a calculus. Some ineffectual efforts were made to seize it. Dr. Whinery now made an examination. The index finger of his left hand met the foreign body as it was apparently being forced downwards and by the forceps passed along the finger, the body was seized and withdrawn. It proved to be a common lead-pencil, nearly four inches long, and partially sharpened at one end, its nearly entire surface being encrusted with a calculous deposit, varying in thickness from a mere shell to two inches in thickness, and quite rough. The patient recovered. He stated that he supposed the pencil may have been introduced by the inmates of a house of ill-fame, whilst he was there in a state of thorough intoxication. This he inferred simply from the fact that his trouble in the bladder came on soon after his visit, whilst drunk, to that house.

The views advanced by Dr. J. C. STONE, in his report on the subject of "Criminal Abortion" are perfectly sound, and will receive the hearty indorsement of every legitimate member of our profession. The suppression of the horrible and growing crime of fœticide must be left to stringent enactments against it by our legislatures, and to the prompt and unflinching action of our public officers, and our criminal courts and juries in the carrying those enactments into force.

Dr. J. C. HUGHES describes a new operation, by which "Distortion of the Long Bones" may be remedied without reduction of their length. It is in some degree a modification of Dr. Barton's well-known operation for straightening distortion of the femur.

The first communication at the session of 1868, by Dr. WM. GULCH, on "Obstetrical Statistics," is interesting and instructive so far as it goes; but presents no new facts.

A curious case of "United Twins" was described by Dr. P. Harvey. The labour was of ordinary duration. In all other respects, save their abnormal union, the children were well developed, and of the full ordinary size of twins. Weight, nearly eleven pounds. They were united from neck to umbilicus. The ribs and clavicles of each were continued to a common sternum, being so arranged as to form one common large thoracic cavity. There was but one funis containing four arteries, but only one vein; it was inserted at the centre of the lower part of the junction. The livers were united, with two gall-bladders. The other abdominal viscera were distinct and normal. In the common thorax were contained two sets of lungs, smaller than usual, weighing only 1½ oz. There was a large double thymus gland. Only one heart, weighing about one ounce, flattened, and suspended diagonally across the centre of the thorax. Instead of being a combination of two hearts, it was perfectly unique in its anatomy, and capable of subserving the purposes of intra-uterine life only. It had but a single auricle, into which opened two systemic and two pulmonary veins. The auricle communicated by two openings, each guarded by a pair of mitral valves, with a large muscular ventricle, from which issued two aortæ of the ordinary size, with perfect semilunar valves. On each side of this large ventricle was a smaller one, communicating freely with it. A small pulmonary artery, destitute of valves, and not more than one-tenth the size of the aortæ, passed from each of the small ventricles. From this description of the circulatory organs of these united twins, it must be evident that only a small quantity of blood could have reached the lungs, much too small for the respiratory purposes of a high organization. Cold-blooded life alone could not be sustained with such a heart; hence these twins were not viable.

Dr. E. Whinery related a most interesting case of "Rupture of the Uterus," occurring during labour, in a healthy female about 37 years of age, in which the child was removed by the abdominal section. At the end of six days from the time of operation the wound in the abdominal parietes had healed by first intention, and the patient sat up in bed for three or four hours. Five days later the lochia had ceased, and the patient went about her ordinary housework. On the 1st of June she menstruated, and again on July 1. She then became pregnant, and on the first day of April, 1866, about twelve months subsequent to the operation, she gave birth to a healthy female child, her labour during its latter stage being aided by the use of the forceps. There was nothing peculiar attendant upon gestation. It was, she said, her tenth pregnancy, and the easiest delivery she had ever had. Two of her children had been stillborn, in consequence of protracted and difficult labour.

The first paper reported to have been read at the annual session of 1869 is a very short and unsatisfactory one on the "Uses and Abuses of Mercury," by Dr. F. Lloyd.

An instructive case of "Gunshot Wound of the Abdomen" from a Minié-ball was reported by Dr. J. F. Kennedy. The ball entered near the umbilicus, and, passing entirely through the abdomen, emerged a little below the right kidney, near the spine. When examined by Dr. K., three or four days after the receipt of the wound, he found that there was a free discharge of fecal matter. The patient was placed on his back, and the wound treated by the simple cold water dressing. The bowels were, as far as possible, kept quiet by opium, while the rectum was occasionally washed out by simple enemata. In about ten days the anterior wound healed up kindly. As to the lower wound, now about an inch in diameter, it was discovered that the intestine had become adherent to the parietes of the abdomen. Paring the edges of the opening, they were approximated, and retained in position by adhesive strips. Free discharges of fecal matter took place per anum, and the patient recovered rapidly. In a month he was discharged, and sent to his home in Chicago.

The same gentleman gave the history of a case of "Fracture of the Skull," with loss of brain-substance, terminating in recovery.

At the annual session of 1870, a very sensible paper on "Orthopædic Surgery" was read by Dr. Wm. Watson.

A paper was also read by Dr. H. T. Cleaver on "Diseases of the Uterus," comprising the history of two cases. The first was a case of retroflexion, with cervical endometritis, dysmenorrhœa, menorrhagia, leucorrhœa, and sterility of over ten years' duration, relieved by reposition of the organ—sustaining it *in situ* by Dr. Hodge's lever pessary, and daily vaginal irrigation by an infusion of hops, with tonics internally.

The second case was one of retroversion, with cervical hypertrophy, dysmenorrhœa, and leucorrhœa of about four months' duration, treated and relieved in the same manner, without resort to either the caustic or alterative means generally recommended in uterine affections of a similar character.

The views advanced by Dr. J. G. House, in his "Report on Venesection," we believe to be sound. There is evidently beginning to be felt a reaction in regard to this measure—at least in the opinions and practice of some authoritative teachers and practitioners in Europe. There is little likelihood, however, that, in future, the practice of venesection will be carried to the same excess as it was formerly. Our improved pathological knowledge in respect to many diseases has greatly increased during the last twenty-five years, and cannot fail to cause a more discriminating and careful resort to so potent an agent as bloodletting. Our own experience of over half a century, in common with that of Dr. H., leads us to believe that, in some conditions of the system, detraction of blood is decidedly useful, in certain cases, as, for instance, of puerperal convulsions, in order to protect the brain from violent and dangerous congestion, previously to the administration of chloroform, as well as in other great congestions of the brain and lungs. In pneumonia and pleurisy, also, especially when complicated by advanced pregnancy, in traumatic fever, where the appetite and power of assimilation are unimpaired, leading to excessive plethora, and endangering the patient by the occurrence of apoplexy of the brain or heart.

In a short paper by Dr. E. H. HAZEN the true doctrine of "Revaccination" is very clearly laid down. Revaccination is shown to be the useful and indispensable complement of a first vaccination—not that it is always successful, but in order that certainty may be arrived at that all disposition to the receptivity of variola has been permanently extinguished in the individual.

Dr. J. W. H. BAKER related a case of "Death resulting from the Use of a so-called 'Hair Restorer,'" the main ingredient of which was shown to be acetate of lead. Death was preceded for some time by well-marked symptoms of lead-poisoning.

The same gentleman read the history of a case of "Purulent Pleuritis." The pus effused into the thoracic cavity was discharged by puncturing the walls of the thorax. The pus that flowed out, after a gush of air, was very consistent and fetid. After about three pounds were removed, the opening was dressed by a simple compress. For the next ten or twelve days, each day, from a half to one or two pounds of pus were allowed to escape. Finally a medium-sized elastic catheter was introduced into the thorax, and passed some six inches into the fluid contents, while to the free end some rubber tubing was attached, and to this, temporarily, a rubber suction ball, by which the catheter and its tubing being freed from any existing impediment, the purulent matter would flow out in a continuous stream. In this manner over thirty more pounds were removed from the thoracic cavity. The general treatment of the patient was by tonics and other remedies adapted to his varying symptoms. A great difficulty arose from the clogging of the inner lateral orifice of the catheter by a mass of floating shreds of fibrous tissue. To get rid of these the catheter had to be withdrawn, and the fibrous mass carefully removed by a spring forceps. On one occasion the mass amounted to about eight ounces. The discharge from the thorax becoming less in quantity and of improved quality, injections were made into the cavity of a solution of carbolic acid. At first, one pound at a time, of the strength of ten grains acid to one ounce water. The injections, gradually increased in strength, were repeated once a week. As the discharge lessened the respiration gradually improved. The effusion of matter into the cavity of the chest, at the end of five months and ten days, entirely ceased, and the health and nutrition of the patient were in a short time fully re-established.

At the annual session of 1872, Dr. F. LLOYD read a paper on the subject of our "Code of Medical Ethics."

Dr. J. R. GARRELL related the history of a case simulating somewhat fracture of the femur; its progress and termination proved, however, that it was one of periostitis, causing destruction of bone.

The volume closes with a series of biographical notices of deceased members of the Society, a list of its present members, and of those who have ceased to be members.

2. The volume of *Transactions of the Medical Society of the State of California*, issued in 1872, comprises an account of the proceedings eventuating in the reorganization of the Society, as well as the Transactions of the first regular annual session of 1871.

This was inaugurated by a very able address from the president, Thomas M. Logan, M.D., on "The past, the present, and the future Interests of the California State Medical Society."

Dr. L. C. Lane read a paper on "Coxalgia, and its Treatment," which presents an admirable description of the disease, with remarks as to its different modes of treatment.

A tolerably full account of the leading features comprising the "Medical Topography of St. Diego County, Cal.," was presented by Dr. D. B. Hoffman, and a short notice of that of Santa Barbara County, by Dr. M. H. Biggs. In respect to St. Diego, Dr. H. remarks: "The primary diseases of this locality are bilious and remittent fevers and rheumatism." In the second report Dr. Biggs points out as the most remarkable feature of Santa Barbara its immununity from all epidemics. There are no malarious diseases—persons who come to Santa Barbara labouring under fever and ague, soon become rid of it. During a residence of twenty years, Dr. Biggs has only seen one case of membranous croup, and has heard of but two others.

"The Medical Topography of Petuluma" is briefly sketched by Dr. G. W. Graves. As to the diseases of this county, neither intermittent nor remittent fevers are ever met with in the vicinity, except in such persons as had been recently exposed to malarious influences elsewhere. Typhoid fever is very rare, and pneumonia is almost unknown. There are few endemic diseases, and no epidemic has been troublesome for a number of years except the smallpox, in the winter of 1868–9. Consumption and chronic bronchitis are, however, of rather common occurrence. The climate also is unfavourable to their cure or amelioration. With the exception of the two latter diseases, the county is one of the healthiest in the State.

Dr. R. W. Murphy describes an ingenious splint, accompanied with a drawing, for the treatment of "Fracture of the inferior maxillary bone."

An able and instructive paper, illustrated by numerous well-devised diagrams, was read by Dr. E. M. Curtis, in reply to the question, "Why do we wear spectacles?"

The report, by Dr. Caleb Cushing, on certain resolutions that had been offered in disapproval of the dispensing of patent medicines or nostrums, and their recommendation by physicians, concludes that the adoption of said resolutions would be a work of supererogation, inasmuch as the *Code of Medical Ethics* approved by this Society, "so completely covers the same ground as that occupied by the resolutions referred to the committee."

Dr. A. B. Stout read an able report on "Hygiene of Cities," having especial reference to the sewerage of the city of San Francisco.

From the very able report of Dr. Henry Gibbons, Jr., on "Practical Medicine," we can only make room for the following interesting extract:—

"The climate of San Francisco is generally thought to be unfavourable to consumptives. But a comparison with the interior, in regard to the proportion of deaths from pulmonary phthisis, will not sustain that view. Of the 3112 deaths in the city, 515 were reported from phthisis; of 1666 deaths elsewhere, 264 were from phthisis, making within a trifle of one-sixth in both cases, the balance being slightly against the city. A few consumptive patients are sent from the city to die in the interior, but a much larger number are sent in the opposite direction, and end their lives in the hospitals of the city." In view of these facts and figures, it is fair to conclude that the climate of San Francisco is as favourable to consumptives, to say the least, as that of the interior towns. "The equable climate of the southern section of the State, its exemption from extremes of cold in winter or of heat in summer, its dry and pleasant winters, would seem to sustain the claim set up for it as a home for consumptives. But the figures do not confirm this. The number of deaths attributed to phthisis in Los Angelos, San Diego, and San Luis Obispo is 50 out of 197, or a trifle over one-fourth. Los Angelos makes the best show, phthisis being charged with one death in five, while San Diego and San Luis Obispo have one in three. From Santa Barbara we have returns for only four months, which give one of three deaths from consumption. But we must not attach too much importance to these partial returns. To be conclusive, statistics must cover a longer period of time, and cases coming from abroad must be excluded. Again, the number of deaths by consumption should be compared with the entire population, and not with the whole number of deaths from all causes; otherwise a small aggregate death-rate would give an undue prominence to the mortality from phthisis."

3. The fifth annual session of the *State Medical Society of Michigan*, June, 1871, was opened by a neat and appropriate address from the President, D. J. BARTHOLOMEW.

The first report is from the committee on the "Treatment of the Insane of the State, etc.," through its chairman, J. H. JEROME, M.D. The most interesting section of the report of the Committee on the "Mineral Springs and Wells of Michigan," is that drawn up by Dr. KEDZIE, on the magnetic condition of these wells.

In respect to the curative virtues of the several springs and wells nothing very reliable is known. In the cases of paralysis reported, there seems to be some good reason for believing that the water of these springs will prove beneficial, as also in those of neuralgia. But in the vast majority of cases, after deducting the beneficial influence of change of air, diet, habits, and associations upon invalids, there appears to the committee to be very little evidence that the waters of these springs are endowed with very special healing qualities.

The report of the Committee on "Vital Statistics," which closes the volume, is occupied with an exposition of the value of such statistics as the basis of prophylactic medicine, and of the mode of collecting the proper material for their construction. The report was presented by Dr. H. B. BAKER, Chairman of the Committee. D. F. C.

ART. XXII.—*First Annual Report of the Board of Health of the Health Department of the City of New York, April* 11, 1870, to *April* 10, 1871. 8vo. pp. 628.

So much good has been accomplished, both in sanitary reform and in scientific inquiry, by the labours of the Metropolitan Board of Health of New York, that a change in its organization may be viewed with some anxiety. It is a satisfaction to learn, however, that, in the separation of the administrative Health Department of the City from that of the "Metropolitan Sanitary District," comprising several counties, nothing appears to have been lost of the authority conferred by recent legislation; while method and energy still characterize the efforts of the Board. Bureaus of "Sanitary Inspection," and of "Vital Statistics" have been created; a revised sanitary code has been completed; and we find in this volume a number of elaborate reports, giving evidence of much activity, and presenting facts of great value to all interested (as who should not be?) in the progress of sanitary science. We have noticed, in former numbers of the Journal, the reports of the two previous years; there is thus less of a general kind to be remarked upon now; but some of the comparative statements are important, and new subjects, with enlarged investigations of older ones, demand attention.

After the official summary by the presiding officer of the Board, the sanitary superintendent, Dr. Moreau Morris, presents the first extended report. Opening with a reference to the duties of his bureau, Dr. Morris states that *experts* are now selected by the Board for special services under its direction; educated physicians and sanitarians to inquire into causes of unhealthfulness, and skilful chemists, engineers, and mechanics for other departments. One of the most gratifying results of their continued experience has been, that, in marked contrast with former years, the health inspectors are now received in a friendly spirit by those amongst whom their duties lie, in the tenement houses and elsewhere. Increase of health and comfort seem to be growingly appreciated, even by those who have always much neglected them. One of the greatest services, perhaps, rendered by such a Board, is the *education of the public* in the application of common sense and knowledge to self-preservation and wholesome living. It has, undoubtedly, been an indispensable part of this instruction, that the Board has been enabled to *enforce* its precepts, when needful; "owners and agents having learned from experience that a prompt compliance with the orders of the Board, or even with the verbal suggestions of the inspectors, is far more profitable than any attempt at evasion or resistance through the medium of the courts." They have learned, also, that "attention to the sanitary condition of their property begets in their tenants a corresponding degree of attention and care in the use of the premises; and is, moreover, a matter of pecuniary interest, as tending directly to secure good tenants and prompt payments."

In connection with this subject, there is much interest in a communication from Dr. H. I. Bowditch of Boston, cited in this volume, concerning the success and usefulness of the London "Improved Industrial Dwelling Company." By the efforts of a liberal capitalist, Sir Sydney Waterlow, and Mr. Allen, a practical mason, over four hundred buildings have been erected for working men, combining salubrity and comfort with economy. The result has been, not only immense advantage to those for whom they were constructed, but six per cent. (or more) of annual profit to the owners. The example of such success, moreover, tends to elevate the whole character of a neighbourhood.

Of course, perfection is not to be expected. Evasion of the law has yet been practicable in New York; so that, in one tenement house, at least, but 1288 cubic feet of air are afforded to the four or six persons occupying each of its bed-rooms and living-rooms. "Gotham Court," as described by Inspector H. G. Stiles, M.D., remains to exemplify the miserable "packing-box" system in some of its worst features.

> "Suffice it to say, that the two 'barrack' buildings on the court furnish tenements (two rooms each) for one hundred and forty-six families, or (averaging four persons only to a family) five hundred and eighty-four individuals, and has, at times, been packed with nearly double that number. The *roof* is a

general playground for children, and *a place of deposit* for *ashes, garbage*, and to a large extent *is used as a privy* by the tenants, whom I cannot blame for preferring it to the foul, dark, and dangerous underground privies, of which more anon." . . "The *cellars* are *dark, horribly foul, and filled with mud, rubbish and human excrement*." . . "The *privies* (which open into and are reached through the cellars) are horrible breeding tanks of disease."

"*Ventilation* of the rooms (that is, *thorough* ventilation) is *impossible* in the present state of things." . . "As a result of these conditions, I found, at the time of my visits, *thirty-six tenements unoccupied*, most of which were on the ground-floor of the main court, proving that these people, poor as they are, cannot occupy these lower rooms. . . "Gotham Court is a nuisance which, from its very magnitude, is assumed to be unremovable and irremediable. I venture to suggest that it is neither." . . . .

From such an account we turn with pleasure to the statement by Dr. C. P. Russel, in his report upon Vital Statistics, of what has actually been effected in the conflict with these enormous evils. In 1868, the tenement houses and charitable institutions (mainly supplied from the former) furnished together 75.79 of the total mortality. In 1869 they gave 68.94 per cent.; in 1870 but 66.22 per cent. of the whole mortality of the city. Here is a gain of 9½ per cent. within three years; amounting to the saving of 2600 lives, due to the sanitary improvement of houses and of their surrounding local conditions.

Upon examining the record of births, marriages, and deaths, we find some figures, not remarked upon at length in the report, which deserve a moment's attention.

The number of *deaths* for the year among natives of this country is set down as 17,461; of those of foreign birth, 9714. Natives (of both sexes) *married* during the year, 5170; foreigners, 10,319. *Births*, of native parents, 2553; both parents foreign, 9282. We do not meet with any statement of the proportion of native to foreign population in the city; but it is a noticeable fact, that while the number of deaths of natives is not very far short of being double that of foreigners, the number of marriages is about twice as large among the latter. If this be, possibly, accounted for by the majority of emigrants being young, marriageable persons, it remains to be more striking, and less easily explained, that the number of *births* of children both of whose parents are foreign is *almost four to one* of those whose parents are both native. With a certain feeling of reluctance, we cannot help seeing in these results some degree of confirmation of the much-controverted views of Dr. Nathan Allen in regard to the decline of productiveness in our American population. As with other subjects of vital statistics, however, the complexity of the problem they present enjoins great caution in drawing deductions.

The total number of deaths in New York for the year was 27,105; being in the proportion of 28.8 to 1000 of the estimated population. From the very full and well-arranged charts, we learn, amongst other points, that by far the greatest mortality occurred in July, during the hottest weather; the least, in June, November, and the latter part of January. It is interesting, in this connection, to glance across the continent, at the record for two years, of the (24) principal cities and towns of California;[1] where we find the largest number of deaths to have occurred in November and January, and the smallest, in April, May, and June. In New York, as in other years, cholera infantum and other "diarrhœal affections" have caused the mid-summer excess; 95 per cent. of the number of such deaths for the summer quarter being in children less than five years old.

---

[1] First Biennial Report of the State Board of Health of California, for the years 1870 and 1871.

From the direct effects of solar heat an unusual number of deaths took place in the same quarter; 238 in all. By the chart it appears that, while the greatest fatality from this cause (39 deaths) accompanied the highest daily temperature (July 18th), the next greatest (34 deaths) was upon a day with a maximum heat 8° lower; and this latter temperature was reached or exceeded on eight subsequent days in July and August, with only one death from solar heat on either. Some other cause besides heat alone must be here concerned. Dr. Russel alludes, without accepting it, to the hypothesis of Dr. G. Thin of Shanghae, that heat-stroke is connected in some way with electrical disturbances of the atmosphere.

Smallpox and varioloid are credited with 293 deaths for the year. This is so much less than the mortality of Philadelphia from the same cause for 1871, that it cannot be regarded as portentous. It gives occasion, however, for the following remarks from J. S. Bosworth, president of the Board, in his report:—

> "The extraordinary prevalence of smallpox over various parts of the globe, especially in countries where vaccination has long been efficiently practised; its occurrence in its most fatal form in persons who gave evidence of having been well vaccinated, and the remarkable susceptibility of people of all ages to successful vaccination, are new facts in the history of this pestilence which must lead to a reinvestigation of the whole subject of vaccination, and of its claims as a protecting agent. There can be no doubt that there is a growing scepticism in the public mind as to the real value of vaccination, and this scepticism has been much strengthened by the repeated occurrence of smallpox, during the past year, in persons who were presumed to have been properly vaccinated. But the medical profession, and especially the more advanced students of contagious diseases, hold firmly to the faith of Jenner, that vaccination is a sure preventive of smallpox when the individual is brought completely under its influence."

Our confidence remains assured in the doctrine expressed in these last words; but, undoubtedly, recent experience has placed emphasis upon the requisite *conditions* for the protective agency of vaccination; it affords security only "*when the individual is brought completely under its influence.*" The era of *careless* vaccination, as mere routine, must end; revaccination (at least once) must be made, not optional, but universal; and as much care, with repetition upon failure, must be used with the second as with the first operation. We cannot quite accord with Dr. Russel in his apprehension of there being evidence of the action of some "occult laws" determining the epidemic prevalence of smallpox, in the fact that, in Scotland, in 1865, two years after the enactment of a compulsory vaccination law, variola was more prevalent and fatal than in 1858, before its passage. The time, we conceive, had not then sufficed for the full enforcement of the law to take effect. Three years later it was recorded that smallpox had almost disappeared from Scotland, as well as from Ireland. The Sanitary Committee of the New York Board, consisting of Drs. G. Ceccarini, M. Gross, and S. Smith, urges the importance, in addition to thorough vaccination, of *isolation of the sick*, and *local disinfection*, against smallpox, as well as against other contagious diseases. It is insisted, also, that special hospitals for such maladies should be placed under the immediate control of the Board of Health. The compulsory removal to hospitals of patients affected with contagious disorders has sometimes been deemed necessary.

A report upon *Disinfection*, embodying the recent experience of the officers and agents of the Board, is presented by H. Endemann, Ph.D., Assistant Chemist. It pronounces favourably in regard to the value of lime, as the cheapest and most effectual disinfectant for gutters; and states the failure, upon trial, of the "dead," or heavy oil of coal tar now in market, asserted to be deprived of its carbolic acid by treatment with soda. This acid, in a 70 per cent. solution, is employed for the disinfection of basements, cellars, and privies. For the same purposes, use is made of strong solutions of protosulphate and of sesquichloride of iron, to either of which a dilute solution of carbolic acid (10 per cent.) may be added. For clothing and bedding, the preferred disinfectant is a solution of sulphate of zinc, eight ounces in three gallons of water; with or without the addition of one ounce of carbolic acid. Chloride of lime and sulphurous acid are also favourably spoken of.

*Relapsing Fever* is the subject of an elaborate and very interesting report by Dr. Stephen Smith, upon materials largely furnished by Dr. E. Harris, of the Metropolitan Board. Opening with a full account of the previous history of the disease in different parts of the world, Dr. Smith gives the particulars of its course in 1869–70 in New York. It began in October, 1869, in an "old rookery" on the Five Points. All the tenements and localities, then and afterwards, the centres of origin of relapsing fever, were resorts of vagrants, and were permanently filled by the most degraded of the tenement-house population. In November, the first cases were admitted into the hospitals. At Bellevue, the disease commenced to spread in January; two physicians, several nurses and patients, in immediate contact with those sick with fever, were attacked.

A Relapsing Fever Hospital was opened on Hart's Island in February. In this institution, also, officers and inmates were affected; viz., two of the medical staff, seven nurses and orderlies, and many other attendants—three of whom died. The total number of deaths for the year, from this disease, in New York, was 184; of cases reported, 2181—a mortality of about 1 in 11. Probably a considerable number of cases were not reported.

Professors Clarke, Flint, and Loomis are quoted at some length, upon the clinical history of relapsing fever. We have room to cite only the main points made out by them and Dr. Smith in his careful researches. These are, that the period of incubation is very uncertain; the invasion, almost always abrupt; duration of the first stage, from two to twelve days, mostly between five and seven; that of the second stage, four to eight days; of the period of relapse, from three and a half days to seven. The time of highest temperature is not the same in all cases. In one instance, observed by Prof. A. Clark, it reached 108½° on the third day of the relapse; in another, it stood at 107° for two or three days; both of these patients recovered. Almost every case presented a higher temperature during the relapse than during the primary paroxysm; and in nearly all it fell below the natural standard in the defervescence. In one case it remained at 95½° for two days.

Upon the question of the origin of relapsing fever in New York, Dr. Smith does not seem to be prepared for a decision. He regards its importation as most probable. As to its contagiousness, this, he remarks, "was recognized by even the most casual observer." After reading with care the evidence given of this in the present report, it does not seem to us possible to arrive at any other conclusion. Yet *local* and *personal* influences are manifestly important elements, in accounting for the different degrees of susceptibility. As Dr. E. Harris states, "thirty-eight fever nests" included nearly two hundred of the cases.

Personal predisposition to this fever has everywhere been observed to be connected, in a marked degree, with destitution. "It clearly sought and found its victims, by preference, among that homeless class of people who wander about the city by day, eating the food which they beg from door to door, or pick up in the streets, and who crowd together at night in damp and filthy cellars and unventilated apartments." Individual exceptions occurred, as when physicians or others were especially exposed to the contagion; but it never showed the slightest tendency to prevail among the better classes.

The sanitary measures employed by the Board to contend with and arrest the spread of relapsing fever were isolation of patients, and the thorough cleansing and disinfection of infected apartments. Of the results, Dr. Smith writes that "thorough cleansing and disinfection were almost invariably followed by a complete arrest of the fever in the tenements thus treated. The experience of the medical officers in the application of preventive measures was most gratifying." The epidemic attained its culmination in the second quarter of 1870, and from that time gradually declined. The highest number of cases (one hundred) was reported April 2; at the same date in 1871, the disease had almost entirely disappeared.

*Yellow Fever* is made the subject of a very interesting report from Dr. M. Morris, City Sanitary Inspector, including an elaborate discussion of the causation and prophylaxis of that disease by Dr. J. C. Nott, formerly of Mobile, whose long experience in the "fever zone" in the south was wisely called into service by the Board. The occasion of these labours was the occurrence of yellow fever at Governor's Island, in September and October, 1870, with a few cases in the city of New York. These last cases—eleven in number—were, by the Special Committee of the Board, Drs. M. Morris, and J. M. Cornochan (health officer), and G. Ceccarini, all traced directly to Governor's Island. They were either soldiers absent from the island on leave, or nurses, relatives, or friends of those resident upon it, and had evidently contracted the disease upon the island. The committee at once advised the removal of all those sick on the island to West Bank Quarantine Hospital, and placing the island under strict quarantine; "no communication being allowed by any soldiers or residents with the infected quarters, until after frost shall have rendered these restrictions unnecessary." Gen. McDowell promptly gave orders to have these measures carried out—the island being, as a station for recruits, entirely under the control of United States government.

Later (Oct. 8) it was concluded to recommend further action; namely, the entire evacuation of Governor's Island; all clothing, bedding, and other textile fabrics there in use to be disinfected by steam-heat; the old wooden buildings known as the "Camp Women's Quarters," and the "Row," near the South Battery, to be torn down and burned, and their basements or cellars to be filled up. Upon these propositions, a correspondence ensued with Gen. McDowell, whose response, declining to carry them out, is given in full. We apprehend that while the most measured courtesy is, perhaps, apparent on the part of the committee of the Board, the position taken by the military commander is quite as easily reconciled with sound logic, and with his duty to the men under his charge. As to the proposal to vacate the island, he thus writes:—

> "Governor's Island has been in quarantine since last Friday week, the most noticeable infraction of it being, as I understand from this report, by the committee of the Board itself, who it seems visited the Island and then returned to the city, a course which, in carrying out what I supposed to be the wish of the Board of Health, I have not suffered any one in the military service to follow. The committee of the Board say new cases are occurring daily, that everything now belonging to the inhabitants should be disinfected, and I have been called upon to keep the island in quarantine, but now the Board ask that, with a few exceptions, all in it should be made to leave it. Some of them, it is to be presumed, have already become infected. Shall these people, some eight hundred men, women, and children, be brought to the city? or shall they be sent inland? What community would, under the circumstances, consent to receive them? There is no other place I know of where they could be sent where they would or could be so isolated as where they now are."

If the Board had been well grounded in its first requisition, that a strict personal quarantine should be maintained at the island, these objections of Gen. McDowell would have been entirely valid; as such non-intercourse can be only justified by the assumption of the *personal contagiousness* of yellow fever; and even the noble self-sacrifice of the committee, in visiting the island, at the risk of their lives, would have been misplaced. But the more deliberate action of the Board was based upon another principle. In its different utterances we cannot fail to see some inconsistency. On one page of the committee's report, when referring to the eleven persons who escaped from the island, or visited it and returned to the city, it is said that "all such persons have been carefully sought for throughout the city by the Health Inspectors, and every possible care taken to prevent any detriment to the public health by *exposure to these individuals*." (The italics are ours.) And on the same page (p. 343), it is again written that "the removal of the troops and other persons, with the precautions advised, would not, it is believed, convey the disease to any other locality, and might save much sickness and many lives." We remark upon this because it exemplifies a kind of indecision or contradiction not now uncommon, but sometimes disastrous in its results. The committee's report speaks of it as the belief "now universal in the medical profession, that the yellow fever poison is not conveyed from place to place in the person." The conveyance by *fomites*, mentioned as taking the place of the idea of contagion, we may refer to again presently. But it would be well if all the profession were fully agreed upon this first point, most emphatically brought out and strongly supported by Dr. Nott, in his report in this volume; that the special cause of yellow fever, the "germ," as he calls it, "*is not bred in the human body*;" "it is never *personally contagious*; though *sometimes* conveyed by vessels, and *sometimes* taken in trunks, boxes, etc.," from place to place.

The requirement of the Board that Governor's Island should be evacuated was judicious, though tardy. Abundant evidence has been brought in favour of this as a principle. We may cite its declaration as long ago as 1825, by Dupuytren, before the Academy of Sciences in Paris:[1] "We should therefore regard as incontestable the principle which consists of evacuating immediately the places where yellow fever is declared to be, and everything for this purpose should be adopted. The utility of such a measure must always justify its rigorous execution." Sometimes it becomes wearisome to go repeatedly over an old argument. But what else can be done, until a truly *final* consistent conclusion be reached? We hold, with Dr. La Roche, that this finality must include the *total abolition of personal quarantine*. It is *à propos* to cite this distinguished writer's latest utterance on the subject; in his exhaustive report to the Board of Health of this city, "On the Origin and Mode of Progression of Yellow Fever in Philadelphia in 1870."[2] Thus he writes: "It is needless to quarantine individuals arriving at the lazaretto in infected or suspected vessels from sickly parts, whether those individuals be in health or labouring under the fever—the necessity of such measures being disproved." A somewhat hesitating adoption of the same conviction appears in the action of the Philadelphia Board of Health[3] in 1870. "As regards the crew (of the infected brig Home) the Board resolved, on the 2d of July, that they be permitted to leave the station with the consent of the lazaretto physician." This consent being withheld, the Board again resolved, July 13th, "that the stevedores, and the crews of the lighters engaged in the discharge of the brig Home, be permitted to come up to the city, if in the opinion of the lazaretto physician it can be done in safety to the inhabitants." It would seem that this last condition, attached to the Board's resolution, along with the prepossessions of the physician, Dr. Thompson (himself soon after a victim to the disease), may have cost several lives. Dr. H. E. Goodman[1] states that, of those who took directly to the city the first barge that received a cargo from the Home, no one was attacked; while, after the date of the second resolution of the Board (July 13), four persons died, all of whom were connected with the barges near the infected vessel. We would express our conviction upon this subject in the emphatic language of Dr. Reese of New York[2], uttered many years since:—

---

[1] Second Report on Quarantine, Gen. Board of Health, London, 1852, p. 204. "From Barcelona, in 1821, about 80,000 persons fled; and excepting those ill on leaving, all were exempt from the malady. Of those remaining in the city, nearly 10,000 died."

[2] Report of the Board of Health of Philadelphia, for the year 1870, p. 85, Appendix.

[3] La Roche, Report, etc., p. 22.

> "I am of opinion that the oppressive features of our quarantine system should be reckoned among the relics of barbarism which an enlightened legislature should make haste to abrogate for the sake of our character as a people. There is no pretext for the perpetuation of a system founded in ignorance, and fruitful only in public and private injustice, cruelty, and wrong."

When all sanitary authorities shall agree to insist upon the most *rigorous inspection* and *effective purification* of every *vessel* coming from the yellow fever zone during warm weather, and (while the idea of *fomites* is still entertained by some), the proper disinfection of all movable goods and cargoes—the removal of all persons from infected vessels will tend to *expedite such* measures, and thus to prevent the concentration of the poison. Towards such a conclusion, the able treatise of Dr. Nott in this volume is an important contribution; as it draws so clear and strong a distinction between *contagion* and *portability*, and affords most cogent evidence against the former being an attribute of yellow fever. At the same time the views of Dr. Nott do not appear to be all quite unassailable; especially in regard to the existence of two *species* or types of yellow fever, the one portable and the other not.

Many other subjects, besides those we have referred to, might, as they are dealt with in this report, detain our attention longer. But we must close with brief reference to one of them alone. On *Sanitary Engineering*, two reports are presented, by Egbert L. Viele and Chas. H. Haswell. Both dwell upon certain evils connected with the growth of the city of New York, the prevention of which should be a primary object in every municipality. Says E. L. Viele (p. 413):—

> "One of the chief causes of mortality is to be found in the defective drainage of certain districts of the city; and this is an evil which is mainly increased by the so-called city improvements, or grading of streets and avenues which are now being carried forward.
>
> "Geologically the island of New York is a metamorphic granite or granitic gneiss, whose originally horizontal planes of lamination have been disturbed and thrown up. . . . . . An extremely irregular surface has thus been formed, with numerous valleys, through which originally flowed many drainage streams, receiving their supply not only from the surface drainage but also from innumerable perpetual springs percolating through the planes of lamination. . . . . There are plague-spots and fever-nests which exist in the vicinity of old obstructed drainage streams, which no sanitary regulations can eradicate. . . . . . Every day the progress of population, the extension of

---

[1] Report of Phila. Board of Health, 1870, pp. 59, 60.

[2] Evidence before the N. Y. State Committee on Quarantine; Albany, 1845.

streets, and erection of buildings, increase the obstacles which have to be removed, and will in a short space of time be insurmountable, except at an enormous expense. . . . . . It is important that the avenues of communication should be laid out in accordance with a harmonious general plan. Unless a comprehensive system is established in advance of private improvements, it becomes a matter of great difficulty and sometimes an impossibility to correct the evils that may arise."

We have been able to do, we fear, but scanty justice to the valuable papers contained in this Report; but the limited access of readers, generally, to such documents makes it desirable to place some of its most important matter before the profession. We know of no better *data* for the study of practical public hygiene. H. H.

ART. XXIII.—*Earth as a Topical Application in Surgery. Being a full exposition of its use in all the cases requiring topical applications admitted into the men's and women's surgical wards of the Pennsylvania Hospital during a period of six months in* 1869. By ADDINELL HEWSON, M.D., one of the attending Surgeons to the Pennsylvania Hospital. With four Photo-relief illustrations. 12mo. pp. 309. Philadelphia: Lindsay & Blakiston, 1872.

How best suppuration can be prevented, or at least restrained, is a problem that during the last ten years especially has engaged the attention of practical surgeons; and with good reason too, for the comfort of the patient, and still more the life of the part, if not of the whole, is involved in its solution. Suppuration being always the result of over-stimulation, the great desideratum is a dressing that shall prevent irritation; and as in the majority of cases it is external influences that unduly stimulate, what is most usually necessary is the protection of the wound against such disturbing causes, be they chemical or mechanical. Is it the air itself that irritates, or living organisms in the air? The question is unsettled and surgeons have shaped their practice according to their beliefs. Maisonneuve, with his rubber cap, would exclude the air altogether; Lister, with his carbolized gauze, destroy the living organisms before permitting the air to reach the wound; Guérin, filter the air of such organisms by passing it through cotton; some by the topical application of an albumen-coagulating agent form a pellicle "prohibiting the germinal cells below the stratum of coagulum from the deleterious action of the atmosphere, just as the epidermis protects the true skin," and this on either the oxygen or germ theory.

Dr. Addinell Hewson, recognizing the value of earth in the disinfection of animal excreta, has for three years been testing its value as a surgical dressing, and in the monograph under review has given the details of his first series of cases, 93 in number; "all the cases requiring topical application admitted in the men's and women's wards of the Pennsylvania Hospital during a period of six months in 1869."

> "I have been compelled to confine myself on the present occasion to an exposition of my first six months' experience only. I have not done this, however, without some satisfaction, for my inferences of those times have not only been thoroughly confirmed by more recent experiences, but there were numerous and constant witnesses of the cases, and by giving the details of *all* of them, I avoid the suspicion of suppressing anything which could have then led me to other conclusions, and they furnish the fairest means of judging of the correctness of the views which I now hold."

These 93 cases embrace all that variety of surgical diseases and injuries which might be looked for during a half-year in the wards of a large city hospital, long and justly famous for its surgery. Ulcers, lacerations, fractures, amputations, burns, cases likely to heal under any dressing or no dressing, cases of doubtful prognosis, cases necessarily mortal, each and all were subjected to the earth treatment. Earth was dusted over the surface, packed into the orbital cavity, rectum, and vagina, plastered over the face. Of the 93 cases 14 died, and of the remaining 79, 10 seemed to have received no special benefit from the earth application, and 11 were either removed from the hospital before cure or transferred to the surgeon next on duty, the earth dressing in either case being abandoned. In some of the remaining cases primary union or unusually early cicatrization took place, in others the recovery was as tedious as under the old and well-known methods of treatment. In his "*comments on cases*," Dr. Hewson writes :—

"A careful examination of the details of all these cases will, I think, satisfy any one that certain phenomena have had place after the use of the earth as a topical application, which, at least in the majority of them, may be fairly considered either as its direct effects, or as results materially influenced by it. These may be arranged as follows :—

I. Effects as to the contact of the earth with the parts.
II. Effects on the pain naturally incident to the cases.
III. Its power as a deodorizer.
IV. Its influence over inflammation.
V. Its influence over putrefaction.
VI. Its influence over the healing processes.

"I. The effects as to contact may be well considered as those which are primary and those which are secondary." (p. 188.)

The "primary effect" is unirritating, "cool and pleasant," being the "prompt answer of the patient constantly given," burning pain being experienced only when hemorrhage had taken place under the dressing.

"It was impossible to determine in a distinct and positive manner the existence of any secondary sensations or irritations dependent on the mere contact or presence of the earth, so as to distinguish them from those which we will consider under the next head, namely, the pains naturally incident to the morbid state or action in the part, unless we should except one, and that was, where we used a pure article of clay which did not allow of free absorption of the discharge, but, on the contrary, formed, by caking, a barrier for the escape of the discharge, and so occasioned pain; or, where the earth of a loamy character was not abundantly applied, and crusting the margins became the source of pain, by being pressed into the part, under such circumstances.

"II. In the changes produced by the earth on the pains incident to the cases themselves, there were in some instances most positive and unmistakable evidence of a favourable effect; whereas in the others evidences of such an effect were wanting, or of a negative character, and in some the earth appeared to aggravate the pain. . . . But absence of pain has characterized all kinds of wounds among these cases, whether great or small, under the dressing, save where secondary hemorrhage had taken place, and was indicated by a 'burning pain.' In burns or scalds of the first degree, in erythematous inflammations, in ulcers where the pain was in the superficies, and there was no periosteal complication or constitutional taint, we had always a distinct or marked abatement of suffering following the earth's application, and the relief continued even where there was an abundant discharge of pus, as long as there was no penning up by the earth. In cases of burns or scalds attended by vesication, or of wounds where a bad article of collodion was used in the dressing, complaints were not rare shortly after the earth was put on, and points were then indicated as the seat of considerable pain, where we found afterwards blisters to have been formed." These blisters contained "fibrinous or coagulated lymph. Such lymph is of rare occurrence in similar cases amongst the patients in our hospitals where other dressings are used, and hence I am disposed to attribute its occurrence here to the presence of the earth. Lymph of this kind would seem from my observation to occasion more pain than the serous form, when pent up under a vesicated cuticle." (pp. 190–1.)

The *deodorizing* effect of the earth (as our author prefers to call it rather than *disinfecting*) was well established by the cases under treatment, and also by experiments made in the dissecting-room of the Jefferson Medical College.

"IV. *Inflammations.*—In no instance was there any evidence of the earth either provoking or aggravating inflammatory action. In those where such trouble was present but deep-seated, or dependent upon taint, it had no appreciable effect; but in all the other cases its use was attended by a sedative and beneficial influence in this respect. In some it retarded such action, in others it appeared to arrest it, and in others it actually prevented its development.

"Case No. XI. is an interesting case as showing the effects of the earth in all these respects. . . .

"Over the development of the abscess there was no evidence of the earth having exerted any influence; but it clearly prevented its exciting any amount of inflammation towards the surface in the surrounding parts. . . .

"Many other cases in the series, of a minor character, might be referred to, but it seems hardly necessary. They all, however, justify the claim for the earth of a power to prevent, and a positively soothing influence over inflammatory action. This I would claim for it, with the recollection and full consideration of the effect from caking pointed out before, for that, as I have mentioned, was a defect in the *method* of using the article, and not necessarily inherent in it as a dressing.

"V. *Putrefaction.*—The efficient manner in which the prevention of this process was accomplished, can be judged of by the details of every one of the cases, in which we had any reason to anticipate such action here referred to. And as evidence of a negative character, I would draw attention to the difference in results in those cases where I abandoned the earth dressings for poultices, and thereby got a rapid separation of the dead parts, with greatly increased discharge, and offensive odour. In the case of C. B. (XLIX.), where I attempted a Pirigoff through injured tissue, and had the misfortune to wound the posterior tibial, as also the artery running down alongside of the tendo Achillis, which I had to divide on account of the violent action of the muscle, and the posterior flap died from being thus cut off from its chief source of nourishment, I had the opportunity of watching the effects of the earth in this respect. Although perfectly dead, the flap seemed not all disposed to separate from the living parts, or in itself to become putrid. In fact I trimmed away, from day to day, the portions which were undoubtedly dead, but never could ascertain when it was going to form its line of demarcation until I had resorted to the influence of a fermenting poultice, which caused its putrefaction in a most extraordinary manner. . . . This extraordinary increase of purulent matter continued as long as I used the fermenting poultice, namely, for twenty-four hours after all the slough was got away, when I again resorted to the dry-earth dressing. . . .

"VI. The last is by no means the least important or the least significant of the results which I have to record, but it needs the least comment of all to attract attention to its occurrence. The singular rapidity with which healing took place in the cases of wounds, whether from operations or accidents, of which I have given the details, and similar effects, so noticeable in all the ulcers, except where there was a local cause, or a constitutional one, must have struck the reader on their perusal as presenting evidence of a remarkable power in this respect." (pp. 196–9.)

As respects the "remarkable power in this respect," we cannot but feel that a most natural enthusiasm has led Dr. Hewson to see more evidence of the existence of this power than others will be able to do. Widely extended trials of the dressing will be required before any other than the Scotch verdict of "not proven" can be given.

One-third of the book is devoted to the consideration of the *modus operandi* of the earth-dressing, the setting forth of the author's views as to the *how* and *why* the stated results followed the applications. Carefully prepared, evidently the product of much labour and thought, of no little scientific interest and value, we very much doubt if it will be enjoyed, even if read, by one in twenty of those who, having confidence in the author's skill and honesty, will turn to the book for information and practical suggestions. Except for a very few there is altogether too much Agricultural and Physiological Chemistry, too much that will repel rather than attract readers. Unfortunately, to medical men in general, Chemistry, except in its most elementary form, is "an unknown terrible." Dr. Hewson should at least have added a final brief chapter, giving a *résumé* of his theories and beliefs. "Is it merely by purely physical properties, such as excluding the air, absorbing the moisture and the excess of discharges, and affording uniform compression and support to the parts, that the earth can be of any benefit?" The author thinks not, for "the most thorough comparison of all these earths" (sand, clay, humus), "by their physical properties alone, and their effects as dressings, show no correspondence between such properties and effects." Is it then "from any chemical influences which it can exert?" So he would have us believe; these chemical influences consisting in the power of earth to oxidize and deoxidize, to decompose certain salts and absorb and retain their bases, and to effect the substitution of *ammonia* for certain other bases (*potassa, soda, lime, magnesia*), of which *potassa* when set free has an influence in promoting the healing process.

However much the record of cases detailed may fail to convince any one of the reality of the full value claimed for the earth-dressings, and however much one may be inclined to question the correctness of the theories adopted, and consequently of the given explanations based upon such theories; yet, the publication of Dr. Hewson's interesting monograph will not only add to its author's already excellent reputation as a surgeon and professional worker, but will induce many to make thorough trial of the application of earth to wounds.

The four illustrations (Woodburytypes) are interesting in themselves, and of positive value as representations of the cases. The excellence and cheapness of reproductions of photographs by the Woodbury and Albertype processes will, it is to be hoped, secure for us in the future better, even if fewer, illustrations in our medical books.

P. S. C.

---

ART. XXIV.—*Injuries of Nerves and their Consequences.* By S. WEIR MITCHELL, M.D., Member of the National Academy of Sciences, Physician to the Philadelphia Orthopedic Hospital and Infirmary for Diseases of the Nervous System, etc. etc. 8vo. pp. 377. Philadelphia: J. B. Lippincott & Co., 1872.

IT would be a great gain to physiology and to scientific medicine, if all who have had the enjoyment of special opportunities for studying groups of important cases felt, as does Dr. Mitchell, that they owe some account thereof to the profession, and the gain would be greatly increased if all such were as able as he to render so good an account of their advantages.

Dr. Mitchell is already known as a worker in this field, by his authorship, in connection with Drs. Morehouse and Keen, of a work on "Gunshot Wounds and other Injuries of Nerves: Philadelphia, 1867," now unfortunately out of print, of "Circular No. 6" (March 10, 1864), from the Surgeon General's office on the same subject, a paper in the medical volume of reports of the Sanitary Commission, and various other articles.

It is to be regretted that a larger portion of some of the former works is not embodied in the present for the convenience of those who, like the writer, have tried in vain to obtain them.

The experience which formed the basis of the works just mentioned and, increased by many cases, of the present one also, being derived from the Turner's Lane Hospital, which collected into its four hundred beds cases of nerve injury from the general hospitals of the eastern military departments, was probably, and we hope will long remain, entirely exceptional in extent, giving to the statements of this work the highest authority in regard to classes of cases which must be, in any ordinary practice, among the rare exceptions.

The usefulness of the book, however, is not limited by its consultation in these rare cases, since it contains many pathological and therapeutical data of much wider applicability.

In the second chapter, upon the anatomy of nerves, some curious facts are given in regard to the amount of stretching which may be borne by them without loss of function. The sciatic nerve of a rabbit was found to conduct electrical excitations, when stretched to the extent of three-quarters of an inch in three inches. A sciatic nerve, in a case of hospital gangrene, was roughly drawn out of the cavity by the removal of the dressing and then thrust to the bottom or one side to the extent of four or five inches. "Some pain resulted, but the sense of touch was hardly disturbed." Nerves, like arteries, frequently escape destruction by being thrust to one side by the passage of a ball.

The chapter on physiology contains much interesting matter in regard to the vexed question of "trophic" nerves. Dr. Mitchell does not consider the vaso-motor function as sufficient to account for the nutritive changes taking place after injuries to nerves, especially when they occur, as sometimes happens, without material change in the temperature or colour of the part. The existence of trophic nerves, as distinct from motor and sensory, he does not, however, consider proved. His experience seems to coincide with that of Brown-Séquard in regard to the occurrence of remote lesions rather in connection with nerve irritation than with paralysis. He does not agree with the observer just mentioned in assigning a special set of conductors to each class of sensations.

In the next chapter, after some remarks upon experimental pathology, a branch of inquiry to which Dr. Mitchell is well known as a valuable original contributor, we have accounts of inflammation, acute and chronic, degeneration and regeneration of nerves. The treatment recommended for the former affection, fortunately not common, is cold (ice and ice water), rest, morphia, and atropia.

The multitude of instructive facts and pathological deductions therefrom, in the next chapters, upon "Varieties of Mechanical Injuries," "Symptomatology" "Remote Symptoms," and "Sensory Lesions," is so great that we can only briefly indicate some points of special interest. Such seem to us to be the experiments upon the amount of pressure necessary to cause paralysis, in connection with the bruising of nerves by missiles, and their injury from tumours, dislocations, reduction thereof, the fœtal head, obstetric forceps, crutches, and other sources of compression. The propagation of pain, paralysis, and anæsthesia from a wounded nerve to others arising from the same plexus, is attributed by the author to a centripetal extension of the inflammation involving neighbouring branches. He takes occasion to object, as he has before justly done, to Brown-Séquard's theory of reflex paralysis from vaso-motor spasm. Some of the most interesting passages are those relating to the severe burning pain or "causalgia" sometimes accompanying nerve lesions and very likely to coexist with or precede the "glossy skin." The fact that the burning pain was lessened when cutaneous vesicles appeared, as they frequently did in successive crops, may be of interest to those who disbelieve in counter-irritation on theoretical grounds.

The effect of severe pain upon the mind is forcibly described in several passages and illustrated by cases :—

"Under such torments the temper changes, the most amiable grow irritable, the soldier becomes a coward, and the strongest man is scarcely less nervous than the most hysterical girl." Of a man who suffered from acute neuritis he says: "From being a man of gay and kindly temper, known in his company as a good-natured jester, he became morose and melancholy, and complained that reading gave him vertigo, and that his memory of recent events was bad."

The subject of nerve suture is discussed, but the author reports no case of his own where it was employed.

Electricity, of course, claims considerable attention, being of importance not only therapeutically, but as a means of prognosis. Manipulation, or "shampooing, rubbing, massage," etc., is a means of treatment highly prized by Dr. Mitchell. It is to be regretted that so efficient a therapeutic resource should be neglected by physicians and suffered to fall into the hands of quacks.

The experience of the Turner's Lane Hospital in hypodermic injections at a time when they were much less used than at present, was an extensive one. "It was usual at one period, I believe, for the assistants to give every morning and every night between sixty and eighty hypodermic injections. During one year at least forty thousand doses of various narcotics were thus administered without any accident."

"I had large opportunity for studying in traumatic neuralgia the comparative merits of narcotics used by the mouth or under the skin, and I have no hesitation in stating as my opinion, that the latter method is not only the more efficient, but also the less harmful constitutionally."

Counter-irritation in various forms seems to have been found of no doubtful utility.

Neurotomy, with a table of cases, and the treatment of remote lesions of nutrition, occupy Chapter XII.

Chapter XIII. contains several cases of wounds of special nerves, the sympathetic and cranial nerves, which are of high physiological interest. That of wounded sympathetic is, we believe, unique. A point of interest therein is the fact that although the symptoms corresponded, in many respects, very closely to those observed after experimental section of the nerve, and one side of the face became much flushed, the retina presented no abnormal appearances.

Some remarks on the pathology of stumps are well worth attention, though the facts adverted to are not new. Such for instance as those upon the various sensations of the presence of a lost hand or foot, and upon the influence of the weather in enabling some patients, like those with chronic rheumatism, to predict an easterly storm.

If, in thus briefly pointing out a few, and only a few, of the instructive and interesting passages in which the book abounds, we shall induce any to give it the careful study it deserves, not only from the specialist, but from the general practitioner, who cannot fail to receive therefrom suggestions far beyond the range of immediate applicability, we shall have done a real service to them and to scientific medicine. R. T. E.

---

ART. XXV.—*Plain Talk about Insanity: Its Causes, Forms, Symptoms, and the Treatment of Mental Diseases, with Remarks on Hospitals and Asylums, and the Medico-legal Aspect of Insanity.* By T. W. FISHER, M.D., late of the Boston Hospital for the Insane. pp 97. Boston: Alexander Moore, 1872.

WE welcome this modest little book as one which will exert a most wholesome influence. While it is especially intended for the general reader, physicians not practically acquainted with insanity may derive most valuable hints and sound doctrine from its pages. If by chance it should be opened by any lawyer, who may be not perfectly satisfied that he already possesses the full sum of human wisdom concerning mental disease, he may learn therefrom, if he will, lessons of unusual truth and soberness. Possibly he may henceforth venture to doubt the infallibility of the judicial mind that pronounced the dictum that upon questions of insanity the opinion of any man of common sense is as good as that of an expert.

The following is an abbreviation of the table of contents: Causes, Forms, Symptoms, Partial Insanity, Monomania, Medical Treatment, Moral Management, Home Treatment, Hospital Treatment, Hospitals and Asylums, Medico-Legal Aspect of Insanity.

The earlier chapters give in a style comprehensible to the general reader much information as to the nature, varieties, causation, and—indirectly—prevention of insanity. Perhaps, however, the chief value of the work lies in its lucid and forcible exposition of the preëminent advantages of hospital treatment of the insane. In a manner as unassuming as convincing, Dr. Fisher shows the superiority of the hospital over the home, the boarding-house, or travel, as a means of promoting the safety, comfort and recovery of the insane. He graphically exhibits the folly and unreason of the prejudice and distrust as to hospitals and their managers. Appreciating the natural reluctance of friends to consign their afflicted ones to the care of strangers at the very time they seem most to need the ministration of loving hearts and tender hands, he points out how the once happy home and beloved family become often the most irritating of all influences; and how, even when the affections are not perverted, the very solicitude of anxious friends and the familiar surroundings of the home, serve to aggravate the disease.

The chapter on Partial Insanity gives an extremely clear account of the manner in which mental disease may be limited, either in its degree, as affecting the faculties with greater or less severity, or in its extent, as affecting solely or principally certain portions of the intellect or certain emotions of the heart. The misery caused by this form of insanity is forcibly depicted and illustrated. The fact that the public at large do not generally recognize the existence of such disease increases immensely the difficulty of protecting and caring for its subjects, and of securing the comfort and safety of their families. The picture Dr. Fisher paints of the part taken by disinterested neighbours, in opposing and interfering with the measures deemed necessary by the family, and sanctioned by their physicians, in regard to a "partially" insane person, is, he tells us, taken from life. This we can well believe, for such instances are of frequent occurence. Ninety-nine per cent. of the sensational stories of "incarcerations" of sane and virtuous husbands by wicked wives, and of faithful loving wives by designing and unfaithful husbands, which pass from newspaper to newspaper, from Maine to Texas, arise simply and solely from limited mental disease which the public, ignorant of the facts, or blinded by prejudice, do not recognize. Dr. Fisher notes the important fact that the victims of partial insanity often exhibit their disease almost exclusively in their homes and to their families; conversing and behaving with much self-control and propriety in the outer world. This should be known and remembered, and we should be cautious how we stigmatize as wicked conspirators against their own flesh and blood, men and women who have always shown themselves honest and honourable. Yet how often this is done, and what a singular phase of human nature it reveals!

While, in the circumstances we have been supposing, the family of the patient are the chief sufferers, in another course of events the unhappy subject of disease may incur disgrace, degradation, even death, for acts which result from his malady. Let him under the rule of some jealously concealed delusion, or from the promptings of diseased impulses, or from total absence of moral power, become the doer of some terrible deed of blood,—and behold, the very public who had protested against his restraint, shall be found clamouring for his punishment as a depraved and monstrous villain.

In the brief chapter on Medical Treatment, attention is earnestly called to the importance of recognizing and at once treating the first signs and warnings of threatened insanity. By insisting on immediate rest or change of work; or by procuring sleep; or equalizing disordered circulation; or invigorating an enfeebled stomach; or by toning and stimulating exhausted nerves,—attacks may be prevented.

The chapter on Moral Management is full of sagacious remarks which show how fully the writer has improved his means of observation. In concluding this subject, Dr. Fisher reminds us that there is always a considerable proportion of the insane who are insusceptible to moral influences. In some, the moral sense is either wanting or perverted; in others, cerebral excitement is too violent, or dementia too complete, to allow of any response to appeals to the feelings.

In discussing the question of placing a patient in a hospital, the author argues that mere feeling upon the matter, either of friends or patient, should be allowed no weight. The grave responsibility rests on the physician to counsel and on the friends to do, what the best medical opinion dictates. This responsibility cannot be evaded. The writer, however, very justly remarks that even in cases where hospital treatment is undoubtedly needed, there may be no harm but a positive advantage, in letting the patient remain at home for a short time. The result of this delay often is to fully convince the family, by their own experience and observation, of the wisdom or even necessity of resort to the hospital. Thus they will be more likely to persevere in this treatment than if not fully convinced of its needfulness.

A few classes of cases are mentioned which may with propriety be kept at home. Dr. Fisher omits to mention among these the rapidly fatal form of disease known as typho-mania. The cases he mentions are some of the less violent, incurable and senile sort, and some others which seem dependent on physical causes susceptible of speedy removal by medical treatment. We believe the doctor errs in including any cases of epileptic mania in the number of those proper to be treated at home. Such patients are never safe out of hospitals.

The chapter on Hospital Treatment contains some sharp hits at the visionary schemes of self-styled reformers, and at the narrow views generally taken by the public of all matters relating to the insane and their guardians. Those who clamour for "free air" and "family life" are quietly reminded that it was during the possession of these blessings that the patients became insane.

Self-control being impaired in the insane, the hospital with its skillfully regulated restraints supplies its need and encourages its recovery. Attempts at restraint are generally resented in the patient's own home; but in the hospital are found the controlling influences of a novel, regular, fixed course of life, new surroundings, new acquaintances, and the example of all, sane and insane, conforming to the discipline of the house. Often, the brain needs, above all things, rest. In this case the hospital is a sort of "mental fracture-box." "To others, and at times to all, it is a mental gymnasium," affording exercise to certain faculties and rest to others. "The manifestations of insanity usually concern the affairs of every-day life, of business or the family. The disturbed feelings and delusions are in intimate relations with the persons and things the patient has been daily accustomed to see." Hence, the advantage of the hospital, free from all old associations.

Dr. Fisher is justly emphatic in warning his readers of the perils that attend convalescence from insanity. These arise from ignorance of the irritable state in which the brain is left for a considerable time after apparent recovery. The hospital physician has occasion in scores of instances to lament the consequences of premature removal. The patient appears sane, and urges his friends to remove him. Often he insists that remaining, after recovery, among the insane, will make him crazy. Then the relatives think that the cure may be all the more speedily confirmed by the cheerful influences of home; forgetting that it was among these that the attack began. Their feeling is as natural, and as harmful if indulged, as the idea that a typhoid fever patient will do better on solid food because he begins to crave it. Complete relapse often results, and with it a diminished hope of recovery. When actual relapse is escaped the patient often retains through life some traces of his disease, which would not have remained under wiser treatment. It is an instructive fact, often remarked by the hospital physician, and referred to by Dr. F., that very often a patient who has been clamourous for an immediate discharge, becomes, if detained a few weeks longer, much less self-confident. He realizes more fully his past condition, is willing to do anything to secure future sanity; and even dreads to leave the quiet haven where peace and reason have come back to him, and to subject his new-found health to the rude tests of a busy world.

In a sensible chapter on Hospitals, Dr. Fisher recognizes the utter impracticability of the "Cottage Plan" as a means of *properly and cheaply* caring for the insane. The "Colonization" system of England and Scotland he says is little different from the practices formerly prevalent in some parts of our country, of "farming out" the poor to the lowest bidder. Certainly, accounts given us of facts in Scotland fully warrant the comparison.

The chapters on the Medico-legal Aspects of Insanity are admirably adapted to the enlightenment of the popular mind. Legal gentlemen, too, are delicately reminded that physicians who have devoted their lives to the study of insanity, in daily intercourse with hundreds of patients illustrating all forms and degrees of mental disease, may, without extravagance, be presumed, until the contrary is proved, to know a little more about such things than the rest of mankind,—

even than advocates and judges. There are few matters in which the proverbial conservatism of the law is more hurtful than in its relations with insanity. The decisions and charges of many courts utterly ignore the scientific advances of the last two centuries.

In this connection we find a short but clear description of "moral idiocy," with well chosen illustrations. The hereditary causation of many of these cases is pointed out. Some famous trials, of our time, are adduced in evidence of the popular blindness and incredulity as to the reality of this form of congenital deficiency. As a contrast to the picture of poor, irresponsible wretches, visited with the direct vengeance of the law, another set of cases is mentioned where popular sympathy has countenanced and juries admitted, the most baseless pleas of insanity, thereby setting free, unpunished, deliberate murderers, to walk among men with confident step and uplifted head. Transitory mania undoubtedly occurs. Probably many a poor young mother, guiltless of crime, is condemned for infanticide; certainly many a popular or influential assassin now enjoys liberty and the respect of men,—both wrongs being due to want of knowledge and proper appreciation of momentary, impulsive, homicidal madness.

Dr. Fisher again exhibits the evil results of the curious popular distrust and prejudice against all who have occasion to bring forward an allegation of insanity, as seen in case a family tries to protect itself from a member who is becoming insane. He may be squandering his property, incurring ruinous obligations, or threatening murder or suicide. Yet, too generally, public opinion and the law will not consent to his restraint until he has become a beggar or a homicide. Truly, personal liberty should be a precious jewel, to be guarded at such cost!

In litigation concerning wills, contracts and obligations, the little knowledge of insanity possessed by lawyers and the public is fully as apparent as in the criminal cases referred to. In illustration of this branch of his subject, Dr. Fisher gives a number of cases which have gained a wide notoriety through the newspapers. Could his sensible and intelligent comments reach all who have devoured the sensational reports and untrue representations of the newspapers, we should hope before long for a more healthful public sentiment.

B. L. R.

---

ART. XXVI.—*A Treatise on the Diseases of Infancy and Childhood.* Second edition, enlarged and thoroughly revised. By J. LEWIS SMITH, M.D., Curator to the Nursery and Child's Hospital, New York; Physician to the Infant's Hospital, Ward's Island, etc. etc. 8vo. pp. 741. Philadelphia: Henry C. Lea, 1872.

IN a review of the first edition of this work, which appeared in the number of this Journal for April, 1869, we expressed the opinion that while it was excellent in most respects, it could not be considered to be a complete treatise on the diseases of infancy and childhood, inasmuch as no mention was made of many of the more important as well as the more common of the diseases of children. Dr. Smith has done much towards removing this defect in the edition before us, and the book has, consequently, been rendered much more valuable. Nearly twenty additional diseases are treated of; among which may be mentioned diseases incidental to birth, rachitis, tuberculosis, scrofula, intermittent, remittent, and typhoid fevers, and the various forms of paralysis. From the preface we also learn "that many new formulæ which experience has shown to be useful have been introduced, portions of the text of a less practical nature have been condensed, and other portions, especially those relating to pathological histology, have been rewritten to correspond with recent discoveries." In consequence of these alterations, and notwithstanding an increase in the size of the page, it has been found necessary to enlarge the volume by the addition of more than one hundred pages.

The disparity which we pointed out in our notice of the first edition of Dr. Smith's book as regards the space given to the discussion of different diseases still exists, but in a much less degree than before. The chapters on diseases of the respiratory organs have been rendered very much fuller, particularly that on pneumonia, which has been rewritten, and is in accord with the views of the disease held by the most distinguished pathologists. Under the head of cerebro-spinal diseases we find that very little change has been made, except of course, in the addition of chapters on chorea and the various forms of paralysis. Dr. Smith while fully recognizing the distinction between simple and tubercular meningitis, and admitting the possibility of distinguishing between them during life, still persists in treating of them in the same chapter, which we cannot but regard as a mistake. The chapter on syphilis in the present edition contains an allusion to the peculiar malformation of the upper incisor teeth and to the interstitial keratitis which are so frequently found in the subjects of congenital disease, and to which no reference was made by the author in the first edition of his work. We are rather surprised, however, at the statement that these observations of Mr. Hutchinson need corroboration. We have certainly ourselves often met with children who, in addition to having a history of syphilitic disease, presented these as well as other signs of syphilis, and were under the impression that they were universally looked upon as important aids to diagnosis.

The chapters on tuberculosis, scrofula, and rachitis are important additions to the work. Scrofula and tuberculosis are shown to be related, but not identical conditions, while rachitis is believed to be an entirely distinct disease, and is not apt to occur in those predisposed to the other two diseases. We think our author is in error in speaking of the tubercular diathesis, and in saying that it may be inherited. It is evident that he only means the predisposition to it may be transmitted. Adopting, as he does, the views of several German pathologists that tuberculosis is a secondary disease following phthisis or scrofula, and dependent upon the absorption of the caseous products of low forms of inflammation, it is difficult to understand how Dr. Smith can regard it as a diathesis in itself. The term scrofula is applied to a condition which is characterized by increased vulnerability of the tissues; or, in other words, by a tendency to inflammation of a chronic or subacute type, the products of which are very apt to undergo caseous degeneration. Hence the frequency of catarrhal pneumonia and of enlargement of the lymphatic glands in the scrofulous, and one or other of these inflammations will, we think, generally be found to have preceded the deposition of tubercle. In regard to the contagiousness of scrofula, he says, that there is no foundation for the popular belief that the disease is communicable. The manifestations of the diathesis which are sometimes noticed after vaccination are frequently cited as proof that it is so; but the author shows that in these cases vaccination simply has called into activity a predisposition which had before been latent, and is no more a cause of the general disease than measles or hooping-cough, attacks of which will sometimes precipitate the occurrence of similar accidents in persons of like tendencies.

The chapters on diseases of the umbilicus, umbilical hemorrhage, conjunctivitis of the new-born, and accidents and diseases incidental to the birth of the infant and the detachment of the cord, are also new, and will be found to contain the necessary directions for the management of these diseases and accidents.

The fevers are rather summarily dealt with, only fifteen pages being given to the consideration of intermittent, remittent, and typhoid fevers. The disease, which some writers on children's diseases have described as infantile remitting, Dr. Smith believes to be nothing more than typhoid fever, which in the young, and especially during the first week, is more apt to be marked by evening exacerbations than in the adult. Remittent fever, when it does occur, is always of malarial origin.

We see no reason to qualify the favourable opinion which we expressed in our previous notice of this book, and can confidently recommend it to any one in want of a good hand-book on children's diseases.

The author has altered, to some extent, the arrangement of subjects—and we think that the changes have generally been judicious. The publisher has also added to the value of the book by increasing the number of illustrations.

J. H. H.

---

Art. XXVII.—*Lithotomy and Lithotrity.* Illustrated by Cases in the Practice of Gurdon Buck, M.D., Visiting Surgeon to the New York Hospital and Presbyterian Hospital, etc. 8vo. pp. 59. New York: William Wood & Co., 1872.

This pamphlet gives the histories of fifty patients treated by Dr. Buck for vesical calculus: three by lithotomy alone, five by lithotomy after the failure of lithotrity, and forty-two by lithotrity alone. Nine of the patients died, eight after lithotrity alone, and one after the employment of both methods. The following are the conclusions to which the author's experience has led him with regard to the choice of operation:—

"1. For patients under 17 years of age, lithotomy should be preferred. . . The only exception admissible to this rule might be a case not under ten years of age, in which a stone was ascertained, by measurement with a lithotrite, not to exceed one-half to three-fourths of an inch in diameter; and which might therefore very probably be gotten rid of by a single operation.

"2. For adults, lithotrity is most advantageously employed when the patient's condition is such as existed in the cases comprised in Groups I. and II. of this article, to wit: A moderate size calculus coexisting with a favourable condition of the urinary organs and general system; also where a like favourable condition of the local organs and general system coexists with a calculus of large size but not of hard consistency.

"3. If a calculus be found by the lithotrite to be very hard, and to measure one inch or more in diameter, though at the same time other favourable conditions may coexist, lithotomy should be preferred, as affording the patient the best chance of a good result.

"4. Great difficulty in passing the neck of the bladder with the lithotrite, whether from enlargement of the prostate or from a fixed position of the stone itself, should deter from the employment of lithotrity.

"5. In a debilitated or reduced state of the system from purulent cystitis and protracted suffering, irrespective of the size of the stone, lithotomy should be preferred. Emptying the bladder instantaneously of its foreign contents, and putting it at rest by draining off the urinary secretion, will afford the patient in such a condition the best chance to rally and recover.

"6. In a case of stricture of the urethra, its complete cure should be a preliminary step to the employment of lithotrity."

This record of Dr. Buck's cases (many of which are of much interest) is adorned with several well-executed illustrations. J. A., Jr.

ART. XXVIII.—*An Introduction to Pathology and Morbid Anatomy.* By T. HENRY GREEN, M.D., London. 8vo. Philadelphia: H. C. Lea, 1871.

WE cordially welcome this little work as an attempt to fill what has too long remained a sensible gap in English medical literature. At present the work of Paget is the only extended treatise on pathology which at all pretends to be on a level with our knowledge of the subject, and this, far from covering the whole field, only treats of "Surgical Pathology." The work, as the author informs us in his preface, is strictly elementary, and is evidently from the pen of one well versed in the subject of which he treats. It is the most clear and condensed statement of the modern views on pathology with which we are acquainted, and as such we cordially recommend it to all those who have not the time or inclination to study other and more complete manuals. The author is largely indebted to Rindfleisch, both for his illustrations and for the arrangement of his material. At the close of the work is a list of the principal authorities referred to. They are twenty-one in number, and it is indicative of the low ebb at which pathology stands in England that out of this number only five English authors are quoted. One French work is referred to, and the remaining fifteen are German authorities. The paucity of our own pathological literature is so well known to the profession that it is no matter of wonder that not a single American publication figures in the list of authorities. In this respect, however, we need expect no change for the better until endowed chairs of pathology shall have been established at our hospitals and medical schools. The minute and prolonged investigations demanded by pathological investigation make it necessary that those who desire to become authorities in this branch should give their entire time to its pursuit, and there is at present with us no means by which any teacher of this fundamental branch of medicine can earn his living by it. W. F. N.

ART. XXIX.—*The Urine and its derangements, with the application of Physiological Chemistry to the diagnosis and treatment of Constitutional as well as Local Diseases; being a course of original Lectures delivered at University College, London.* By GEORGE HARLEY, M.D., F.R.S., Fellow of the Royal College of Physicians, etc. etc. With illustrations. Philadelphia: Lindsay & Blakiston, 1872.

As is mentioned in the preface the lectures which compose this book were originally delivered to a mixed class of medical men and advanced students during a period of ten years, and afterwards published in the *Medical Times and Gazette*. They are not, however, less acceptable on this account in their present revised form, and they will well repay the student and practitioner for the time taken in their perusal.

The arrangement of the contained matter differs in some particulars from that generally adopted in works upon the Urine; and upon the whole, the method chosen by the author is calculated to render the subject more interesting to those who wish to make practical clinical use of the result of the investigations of others. In treating of each important ingredient of the Urine the author gives us first its "Chemistry," or its prominent chemical features, and the means by which it may be recognized and its amount determined; then its "Physiology," if it has one, or those circumstances attending its production in health; and finally its "Pathology," or an account of the various pathological conditions accompanying its appearance or causing it, and he includes under this last head a short *résumé* of what he considers the best and most scientific mode of treatment for these conditions.

One great advantage possessed by the book is its freedom from those chemical technicalities which render so many works uninteresting to those who have not had special opportunities for practical manipulation. At the same time the necessary processes are sufficiently described for all general purposes, it not being within the intention of the author to give such further information as may be readily obtained from works upon pathological and physiological chemistry. He, however, as indeed he has shown by example, considers such extension of knowledge in the highest degree desirable for those who wish to aid in placing Medicine nearer the line of Sciences, nor does he believe that the medical chemist should give his entire attention to the study of *Pathological* Urine. He says:

> "One must not, however, be led away with the idea that the urine is the royal road to knowledge, or he will be doomed to disappointment; nor must we flatter ourselves that its study is an easy one requiring neither previous preparation nor subsequent application; for, on the contrary, in order to make Urology bear fruit we require to employ in its cultivation both perseverance and skill. It is not a little remarkable that this secretion, which inspires most of us with a feeling of aversion, should not only have rendered incalculable service to Clinical Medicine, and yielded brilliant discoveries to Chemistry, but also solved many of the most abstruse problems of Physiology. Notwithstanding all this, it has not done nearly as much as it might have done, nor as it ought to have done; but this is owing to no defect on its side, but in consequence of its votaries having been always too eager to profit by its pathology, ere they had mastered the rudiments of its physiology."

To the lectures upon the more important substances found in normal urine are added two, on Albuminuria and Diabetes, which have been reproduced elsewhere, and which add to the completeness of the collection in its present form. We are surprised, however, to find no mention of the bile acids among the otherwise quite complete list of the substances found but rarely in the urine.

On the whole, we have here a valuable addition to the library of the practising physician; not only for the information which it contains, but also for the suggestive way in which many of the subjects are treated, as well as for the fact that it contains the ideas of one who thoroughly believes in the future capabilities of Therapeutics based on Physiological facts, and in the important service to be rendered by Chemistry to Physiological investigation.

H. B. H.

---

Art. XXX.—*Practical Lessons in the Nature and Treatment of the Contagious Diseases: an Account of the Primary Syphilitic Poison and of its Communicability.* With an appendix on the recent report of the Royal Commission on the Contagious Diseases Act, and its application to the Voluntary Hospital System. By John Morgan, M.D., F.R.C.S., Surgeon to Mercer's Hospital, and to the Westmoreland Lock Hospital, Dublin, etc. etc. Small 8vo. pp. viii., 338. London: Baillière, Tindall, & Cox, 1872.

We have not been very favourably impressed by either the matter of Dr. Morgan's book, or the manner in which it is presented. The author is what is called a "unitist" or "unicist" in his doctrines: that is to say, he does not believe in the essential diversity of chancroid and syphilis; but he seems to entertain somewhat confused notions as to what the views of "dualists" really are. His observations and experiments do not bring to his readers' minds that degree of conviction which they evidently do to his own; for the patients whose cases he describes seem to have been in most instances prostitutes (who, without any play upon words, must be acknowledged not to have furnished that virgin field for inquiry which is so essential in an investigation of this nature), and in every instance he appears to have relied implicitly upon the accuracy of the accounts which his patients gave of their previous history. In one respect we think Dr. Morgan's book will serve a good purpose; and that is in calling attention to the possibility of infection by vaginal discharges in women who are syphilitic, but in whom the disease is in a state of quiescence.

The author's style is by no means lucid, and we observe several verbal mistakes, some of which are so frequently repeated that they can scarcely be ascribed to mere carelessness: such is the constant use of the word *osteoscopic* instead of *osteocopic*. The book, as a whole, is poorly set forth, and the illustrations, with a very few exceptions, are utterly beneath criticism. We must not omit to mention that Dr. Morgan expresses himself quite favourably as to the practice of syphilization, and in order to promote the efficiency of lock hospitals, recommends that they should be provided with special attractions in the matter of diet and accommodation, so as to induce patients to enter them more readily, and to be willing to remain in them until cured. J. A., JR.

---

ART. XXXI.—*The Treatment of Venereal Diseases: a Monograph on the Method pursued in the Vienna Hospital, under the Direction of Prof. Von Sigmund, including all the Formulæ.* By M. H. HENRY, M.D., Surgeon to the New York Dispensary—Department of Venereal and Skin Diseases, etc. Adapted and arranged from the German. 8vo. pp. 49. New York: William Wood & Co., 1872.

IN this slender volume, Dr. Henry, the accomplished editor of the *American Journal of Syphilography and Dermatology*, has given to his professional brethren a valuable practical contribution to the literature of a most important subject, and one concerning which, in spite of all that has been written upon it, a good deal of uncertainty, not to say ignorance, still prevails. As the author justly remarks, in his introductory paragraph, the assumption that every medical practitioner is perfectly familiar with the therapeutics and essentials of treatment in venereal disorders, is proved by experience to be ill-founded: there is, on the contrary, we believe, no branch of practice in which intelligent and otherwise skilful surgeons are more apt to err, than in that which is concerned with the management of this particular class of affections. This is readily accounted for by the fact that there is afforded in this country little or no opportunity for the clinical study of venereal diseases, and by the fact that works on general surgery—to which the majority of practitioners of course look for information on these topics—necessarily can deal only with the broad principles and outlines of treatment, and are for want of space forced to ignore the multiple details which, though taken separately they may seem of trifling importance, yet in the aggregate combine to render the treatment of any individual case successful or unsuccessful according as they are observed or neglected.

It is as a contribution towards filling this acknowledged gap in the means of education accessible to American practitioners, that Dr. Henry's monograph is offered; and affording, as it does, a concise but comprehensive view of the minutiæ of practice adopted in the Vienna Hospital (the Venereal Department of which is at least unsurpassed in the excellence of its appointments), it forms a contribution of no little importance. To study an accurate record of the details of clinical practice is the next best thing to being able to watch that clinical practice in person; and we cordially commend to our readers' consideration the practical rules for treatment which are here given, and the rich storehouse of formulæ which have been found serviceable in Prof. Von Sigmund's large experience. J. A., JR.

---

ART. XXXII.—*Essay on Vaccinal Syphilis.* By G. LANOIX, M.D., Member of the Legion of Honour; Chief of the "Service des Vaccinations" of the Hospitals of Paris, 1865–1870, etc. etc. 8vo., pp. 8. Published for the Author: New York, 1872.

EVER since the days of Jenner there have been medical writers, some even of note, who have attributed to the process of vaccination, when performed with virus procured from the arm of an individual who is labouring at the time under some infectious blood-disease, the power of communicating the same to the vaccinated subject. This view of the danger incurred in vaccination, having reached the public ear, and supposed to be derived from accurate and repeated observation, has been, and still remains, a formidable obstacle to the prompt and general submission to vaccination of the children of all portions of the community.

To prove the communicability of syphilis by the use, in vaccinating, of matter from infected subjects, is the object of Dr. L. in the essay before us. He describes the manner of the propagation of syphilis by vaccination as twofold: 1st. By rousing into activity the latent syphilitic poison, existing in the blood of the vaccinated individual, named by Dr. L. "*Envolved Vaccinal Syphilis;*" and 2d. By the direct conveyance into the system of the patient, of syphilitic in conjunction with the vaccine virus, which Dr. L. names "*Inoculated Vaccinal Syphilis.*"

The evidence adduced in support of these views is very far from being conclusive. We must say, positively, that we have never met with a solitary case, during a very extensive practice of over half a century; during thirty-two years of which we held a public appointment, the duties of which necessarily demanded a close attention on our part to everything connected with the pathology of the vaccine disease, and to every cause or occurrence interfering with its prophylactic power as to variolous infection; with not a solitary case, we repeat, which caused us to suspect that by the process of vaccination any danger was incurred of communicating, or of evolving, in the vaccinated, any form of syphilitic disease. We have never, in a single instance, observed the series of phenomena laid down by Dr. L. as diagnostic of either of the forms he describes of "vaccinal syphilis—the evoked or inoculated." It is true, in our vaccinations and revaccinations, we have been careful that the matter we made use of should be genuine, pure, and from the arm, so far as could be ascertained, of a healthy child.

If the insertion of vaccine matter into the person of one who is affected with latent syphilis, is capable of evoking the latent poison into action, we should certainly have seen this occasionally exemplified in reference to the pupils of our public schools, some hundreds of whom were subjected to vaccination at the instance of the College of Physicians of Philadelphia, by a committee of three of its Fellows, of which we were a member. Some of these children remained under our observation permanently for twenty-five years subsequently.

Dr. L. remarks, in conclusion, that from the danger incurred by vaccination as set forth by him, he knows of no "certain and practical" means of escape. "Animal vaccination" he believes to be "the only resource which gives us a logical and practical solution to the problem so earnestly sought after."

It is unnecessary for us to enter upon the question of animal vaccination. Late experience in France, Belgium, etc., does not appear to be in its favour. To resort invariably for vaccine matter to the cow or horse would be a preposterous suggestion, which, even if it could be carried out, would be productive in many cases of unfavourable results. It is certainly an unnecessary procedure. Proper care in the selection and preservation of vaccine matter, its proper insertion in the arm, and care that its regular course throughout its stages of incubation and maturation is not disturbed are all the precautions required in order to render the vaccine infection complete, and unaccompanied by danger of any kind.

There is, moreover, a commercial feature evident in Dr. Lanoix's publication, which is calculated to excite distrust as to the disinterestedness and reliability of the doctrines he endeavours to inculcate. D. F. C.

---

ART. XXXIII.—*The Question of Quarantine. The Nature and Prevention of Communicable Zymotic Diseases. A Paper read before the Medical Library and Journal Association of New York, January 5th*, 1872. By ALFRED L. CARROLL, M.D., etc. etc. 8vo. pp. 22.

THIS is a highly interesting pamphlet on a most important subject. Is it possible to prevent the introduction of any disease by the quarantine of infected vessels, their crews, passengers, and cargoes, or of infected persons and merchandise, by a strict *cordon sanitaire* embracing mainland routes of intercourse and trade? and, if so, what are these diseases? where do they originate? What, also, are the quarantine restrictions and rules demanded for their exclusion, with the least inconvenience to those who are their subjects, and the least possible obstruction to commerce and trade and to intercourse of individuals? All these points are directly involved in "the question of quarantine," and are briefly, but candidly, discussed by Dr. Carroll. His general conclusions are as follows:—

"I. Communicable zymotic diseases depend upon material organic poisons, and although some of them (as plague, cholera, etc.) may appear to be endemic in certain localities, it is probable that they exist there only by the retention and recrudence of their specific contagion; it is almost certain, at all events, that they do not arise spontaneously elsewhere.

"II. 'Quarantine of observation' should in all instances apply to living beings in whom contagion may remain latent, rather than to inanimate substances, which may be disinfected at once.

"III. Preventive measures should be adapted to the respective modes of contagion of the several diseases; stricter isolation being necessary in the case of those poisons which are volatile enough to be conveyed in the air, or in vapour of water, than with those which are transmissible only by solid or liquid media.'

D. F. C.

# QUARTERLY SUMMARY

OF THE

# IMPROVEMENTS AND DISCOVERIES

IN THE

# MEDICAL SCIENCES.

## ANATOMY AND PHYSIOLOGY.

1. *Variation in the size of the Red Corpuscles of the Blood as the result of various Reagents.*—The results of 40,000 measurements in 174 animals of different species have shown M. Manassein that the size of the red blood-corpuscles *diminishes* under the action of septicæmic poisoning, exposure to a high temperature, and to an atmosphere containing an excess of carbonic acid, whilst they *enlarge* under the influence of oxygen, and agents lowering the temperature of the body, as cold, quinia, cyanic acid, and alcohol. Morphia, however, forms an exception. The corpuscles enlarge in acute anæmia.—*Brit. & For. Med.-Chir. Rev.*, April, 1872, from *Centralblatt für die Med. Wissensch.* No. 53, 1871.

2. *Nerves of Taste.*—Dr. Ph. Lussana has furnished (*Archives de Physiologie,* March and May, 1872) an interesting addition to our knowledge of the nerves of taste derived from pathological observations. He relates the case of a woman, in whom Dr. Vanzetti twice excised a portion of the lingual nerve; two years afterwards it was found that the tongue was normal in form, nutrition, and colour on the affected side, but had entirely lost its gustatory sensibility, sweets and bitters being alike unperceived. This result he points out might have been anticipated by our knowledge of anatomy, since it is known that the lingual alone ramifies in the mucous membrane of the anterior part of the tongue, to the exclusion of the glosso-pharyngeal, which is distributed to the posterior region of the lingual mucous membrane alone. He next proceeds to show that the gustatory fibres of the lingual nerve *do not come from the fifth*, and this he proves by adducing cases of complete paralysis of the fifth, yet in which taste was perfectly preserved. They come from the seventh, as is shown by the loss of taste when the facial was divided or paralyzed, and are, in fact, contained in the chorda tympani.

3. *Excretion of Phosphates by the Kidneys.*—Prof. Falck, of Marburg, relates a series of experiments made by him, the object of which was to determine in what proportion and in what time various quantities of phospates of soda introduced directly into the blood are eliminated through the kidneys. The details of three experiments on dogs are given. In the first of these, 5.395 grms. (83 grains) were introduced, and it was found that in seven hours the whole quantity had passed into the urine. The elimination occupied the whole of this period, the largest amount being in the second hour after the in-

troduction. In the other two experiments the quantities were 10 and 9.5 grms. respectively (154 and 146 grains), and it was found that these quantities were not wholly eliminated by the kidneys, a part probably passing out of the body by the intestinal canal. So that it would appear that the kidneys have only the power of excreting phosphates up to a certain maximum rate; that, therefore, when large quantities are present in the blood, their excretion is very gradually accomplished, and when the quantities are very excessive, the intestinal canal is brought in to aid the kidneys.—*Glasgow Med. Journ.*, May, 1872, from *Virchow's Archiv*, December, 1871.

4. *Urea in the Animal Body.*—GSCHEIDLEN has examined almost every tissue in the body for urea, and finds it universally distributed, except in the muscles, in which it is never present.

5. *Investigations on Low Organisms.*—Prof. RINDFLEISCH, of Bonn, has published (*Virchow's Archiv*, December, 1871) some investigations on this subject which are of great interest, and which, when further prosecuted, are likely to lead to important results. His object has been to find a method by which he could cultivate fungi, in such a manner as that, while the substance is exposed to the air, it should be protected from all impurities. With this view he prepares a square microscopic cover-glass, by placing a small drop of wax at each corner, so that when the cover-glass is placed on the slide it is supported as on four pillars of hard wax. The substance to be observed is placed in the centre of a well-cleaned glass slide, and the cover-glass is then placed on it, being afterwards slightly fixed by wax at the four corners. By this means the substance to be investigated is situated beneath the centre of the cover-glass, and around it, under the cover-glass, is a thin zone of air. But this zone is so thin that it will be perfectly still, and no dust will be carried in by currents, while at the same time there is nothing to interfere with any chemical change which may occur between the air and the growing fungus. This method being devised, the author proposes to sow various substances with the spores of different fungi, and observe the results. It is to be observed that during the intervals of observation the preparations are kept in a moist atmosphere. The first observations recorded were made with mould fungus. A portion of apple pulp was placed on a slide, and this sown with spores of the fungus found in rotten apples (*botrytis cinerea*) and the growth of the fungus was seen to take place in the most beautiful manner. It was remarked that, strangely enough, though the mycelium of the fungus grew continuously, the spores were only produced at night. The favus fungus (*achorion Schœnleinii*) was next subjected to observation. A favus crust was moistened with a drop of distilled water, and treated as above. The fungus grew, but its growth was comparatively slow, threads growing out from the moistened crust and producing spores. The spores were rod-shaped as they were formed, but on the addition of a drop of water they swelled up and became globular. The same fungus was also cultivated on a portion of the fruit from plum jam, and the result was a much more vigorous growth than when the favus crust was merely moistened. The different parts were distinctly larger and the growth richer, so that the author describes it as quite a tropical growth of the fungus. We are glad that the author promises still further observations of this interesting nature.—*Glasgow Med. Journ.*, May, 1872.

6. *On the Occurrence of Fungi in the Blood of healthy Men.*—Dr. LOSTORFER has published some observations made by him on blood taken from the finger of healthy men, with precautions to insure against contamination. A single drop was placed on a slide and preserved from evaporation by being kept in a moist chamber. During the first two days nothing noteworthy was remarked; but on the third day there appeared pale globular granules grouped together to the number of two or four, up to twelve. On the fourth day these groups had enlarged both by increase in size in the individual granules, and increase in the number of granules forming the groups. At the same time the granules had somewhat changed their shape, becoming from globular more

angular, so as to resemble the sarcina-form. On the fifth day the groups were still larger, this depending very little on increase in size of the granules, but chiefly on increase in number. As they resemble the sarcina in form, so do they also in their mode of increase as actually observed, this mode of increase being by division. They differ from the commonly known appearances of sarcina in certain points; (1) they are much smaller; (2) the groups are made up of a much larger number of individual granules; (3) they are always colourless, whereas the sarcina ventriculi has generally a yellow tinge. But various observers have already shown that the same fungus may exist in somewhat different conditions under varied circumstances (see even the case of the favus fungus in the article from *Virchow's Archiv*, abstracted above), and the author has found that when Pasteur's fluid is added to the blood in which these organisms have become developed, they become considerably larger, their angles become more marked, and they take on a yellowish tinge, so as to approach much more nearly to the better known appearances of sarcina. The author himself has no doubt as to their identity with the sarcina ventriculi. These organisms are not present in the blood while in the vessels, but these experiments seem to show, that in the majority of cases at least, their germs are there present, and that when the blood is effused and left at rest, the sarcinæ may develop. It is to be remarked that the development of the sarcinæ was not a phenomenon of the ordinary process of decomposition of the blood; the experiments were made with special precautions against the admission of germs of bacteria, etc., and as an actual fact the sarcinæ appeared before any signs of decomposition, or the development of bacteria, so that the author seems warranted in concluding that their germs were present in the blood at the time of removal. The author then refers to various instances in which the occurrence of sarcinæ in other parts of the body than the stomach has been recorded. It has been observed in the lungs, and in the urine especially, and he has no doubt that in these cases the blood was the source from which the germs of the organism were derived. There is also a very strong presumption that even in the stomach the germs are supplied by the blood.

The very remarkable fact of the development of sarcina in healthy blood has been confirmed by Dr. Ferrier, whose investigations are published in the *Brit. Med. Journ.*, January 22, 1872.—*Glasgow Med. Journ.*, May, 1872, from *Stricker's Jahrbücher*, Pt. IV., 1871.

7. *Precocious Development.*—M. Flugel (*Bayr. Arztl. Int, Blt.*, No. 49, 1871) gives the account of a female child who had died at the age of 5 years and 6 months, from an attack of dysentery, and at that period had attained the height of 5 feet, and a proportionate development of the body throughout. When *six* months old she had cut all the incisor teeth, when nine months old all the molars. When she had reached her eighteenth month, her catamenial discharges first made their appearance, and from that time occurred with great regularity, especially during her later years. Whilst present she exhibited an unusual degree of liveliness. The hair of her head was long and beautiful. The mamma prominent, external genitals well developed but devoid of hair. The pelvis was capacious. The condition of the internal sexual organs was not ascertained. The intellectual powers of the child, although for six months preceding her death she had begun to prattle, did not appear to be any more advanced than customary at her age.—*Centralblatt f. d. Medicinish Wissenschaften*, Feb. 17, 1872. D. F. C.

## MATERIA MEDICA AND GENERAL THERAPEUTICS AND PHARMACY.

8. *Action of Chloral Hydrate.*—The author of a prize essay, presented to the Medical Society of Lyons, has observed (*Lyon Medical*, 1872, p. 296) that the action of chloral on animals varies according to stature, age, and race; old dogs resisting its action less than young or adult ones, and hounds and spaniels

being more sensitive than bull-dogs and terriers. It acts most quickly when injected into the veins, less quickly when given by the mouth, and more slowly still when injected subcutaneously; four or five *grammes* dissolved in fifteen or twenty *grammes* of water acting in ten to fifteen minutes when given by the mouth, in fifteen to twenty when injected subcutaneously, and almost immediately when introduced into a vein, when it may prove fatal. When injected subcutaneously it causes inflammation, which may proceed to sloughing; when given by the mouth its acrid taste may induce vomiting, and it always increases the secretion of saliva. Its first effect is on the spinal cord, impairing movement, so that the walk of the animal becomes irregular and stumbling, and it finally falls and its muscles become flaccid. Its second action is on the brain, the sensibility of the animal becoming first impaired and then entirely abolished. At first the animal feels pricks and burns, moving and growling when hurt, but afterwards it becomes completely insensible, and then its life is in danger. Thirdly, it paralyzes the sympathetic, producing contraction of the pupils, and congestion of the skin and mucous membranes, mesentery, and brain. As the action increases, the cardiac ganglia become paralyzed, the heart beats slowly, the respiration diminishes, and the temperature falls. The sequence of the symptoms is the same in man, with the exception that the conjunctiva becomes first anæsthetized and the nasal mucous membrane last. Chloral, when mixed with blood and heated to 40 deg. C. (104° Fahr.), is decomposed and yields chloroform. The blood of a chloralized animal warmed to the same temperature also gives the reaction of chloroform, and the greater the alkalinity of the blood the more quickly does it do so. The whole of the chloral is decomposed into chloroform and formic acid by the blood, for, after it has been mixed with blood and warmed, the indications of the presence of chloroform are not increased by the addition of sodium carbonate to the blood. The chloroform and formic acid are finally converted into sodium chloride and formiate, and eliminated by the urine. The author believes the differences between the action of chloral and chloroform to be due to the chloroform given off from chloral being in a nascent condition. In cases of suppurative arthritis, white swelling, or necrosis, where chloral given by the mouth, as well as subcutaneous injection of opium, have not afforded relief, the author has seen much benefit derived from the local application of chloral either to a sinus or endermically. He finds it useful in the cough of measles and in whooping-cough. It is of little use in epilepsy. It is best given in syrup of tolu or syrup of oranges. The ordinary dose for an adult is two or three *grammes*; for children under five years, not more than fifteen to twenty *centigrammes*; under ten years, twenty-five to fifty *centigrammes*; between ten and fifteen years, one to two *grammes*. Hypodermic injections of one *gramme* of chloral in one *gramme* of water are useful in furious mania, delirium tremens, and tetanus. This method of application has the inconvenience of producing local inflammation. Chloral may be employed endermically by placing one *gramme* of it in powder on a wound or fistulous opening, or on a blistered surface about an inch in diameter. It produces a soft grayish slough, which falls off in two or three days, leaving a wound ready to receive a fresh dose. The wound should be covered with lint or charpie to prevent the dissolved chloral from running over the adjacent skin and blistering it. Chloral is contraindicated by gastric irritation, by organic lesions of the intestinal canal, and by laryngitis. In large doses, it will be hurtful if cardiac or cerebral disease be present. The author finds from four experiments that the action of chloral and strychnia are antagonistic, but the action of strychnia is more powerful, so that an animal put asleep by chloral can be awakened by strychnia, but one under the action of strychnia cannot be put to sleep by chloral. The action of Calabar bean and chloral are antagonistic, but that of chloral is more powerful than that of the bean.—*Brit. Med. Journ.*, May 11, 1872.

---

9. *Action of Digitaline on the Circulation and Temperature.*—ACKERMANN (*Berlin Klin. Wochenschr.*, 1872, p. 27) thinks that digitaline renders the pulse slow by acting on the ends of the vagus in the heart. This action is prevented by atropia. Large doses quicken the pulse, both by paralyzing

the vagus and stimulating the musculo-motor apparatus or quickening nerves of the heart. This quickening is frequently followed by slowness and irregularity, which are probably due to commencing paralysis of the muscular substance of the heart. The stoppage of the heart which succeeds this, or which may even occur immediately after the primary retardation, is independent of any action on the inhibitory nerves of the heart, and is due to paralysis of musculo-motor apparatus. The blood-pressure is increased by the injection of digitaline. This rise in pressure is independent of the pulse-rate, and is chiefly or entirely due to irritation of the vaso-motor nerves. It is less when the spinal cord is divided at the atlas previous to the injection. It is sometimes preceded by a fall, due to the digitaline exciting the vagi before the vaso-motor nerves. The rise of blood-pressure is followed by a fall, which is chiefly due to vaso-motor paralysis, but partly also to cardiac paralysis. The undulations in blood-pressure first noticed by Traube, and discovered by Haidenheim to depend on the relations of the respiration to the activity of the heart, are rendered slow by digitaline, but in exactly the same proportion as the pulse, so that the number of pulse-beats in each undulation remains unaltered. In previous researches, he had found no alteration in temperature produced by digitaline in the temperature of the body. This he had measured in the rectum, which, as Haidenheim has shown, is unsuitable for such observations. On measuring it in the vena cava with one of Haidenheim's thermometers, he found that the temperature fell when the blood-pressure rose, and rose when blood-pressure sank. The temperature rose over the normal when the blood-pressure fell below it. The fall of temperature which accompanied the rise in blood-pressure was most marked when the pulse was frequent and small, and the pressure less, before the injection of digitaline; and was less when the pulse was quick, even although the pressure rose. The benefit produced by digitalis in dropsies is due, Ackermann thinks, to the excitement of the vaso-motor nerves, which increases the pressure of blood in the arteries, lessens it in the veins, and quickens the circulation. These conditions cause absorption of fluid from the tissues; and the fluid thus introduced into the blood, along with the increase in the arterial pressure, produces diuresis. The antipyretic action of digitaline may be due to the fall of temperature which accompanies the increase in blood-pressure.—*Brit. Med. Journ.*, May 11, 1872.

---

10. *Action of Antimony.*—From a series of experiments on frogs and other animals, Dr. S. Radziejewski comes to the following conclusions in regard to the action of antimony: 1. The emetic effect of the tartrate of antimony introduced into the stomach is the result of the action of the drug on the mucous membrane of the stomach, and not of its absorption into the blood. The effect of the peculiar irritation of the stomach produced by the substance is, by reflex action, to produce vomiting. 2. The depression of the action of the heart is also a result of reflex action, and not, as some have supposed, a special result of the action of the potassium contained in the tartrate. 3. Antimony has, in addition to its effects on the intestinal canal also a general action on the organism corresponding to that of arsenic.—*Glasgow Med. Journ.*, May, 1872, from *Reichert and Du Bois-Reymond's Archiv*, Part IV., 1871.

---

11. *Physiological Action of Tobacco-smoke.*—Vohl and Eulenberg find that the amount of nicotine in snuff and tobacco for chewing is so minute that nothing like nicotine-poisoning can result from their use. The action of tobacco-smoke and tobacco-juice is not due to nicotine, for it contains none, but to pyridine, picoline, colledine, and other bases forming a homologous series, which are produced during the combustion of tobacco. The reason why stronger tobacco can be smoked in a cigar than in a pipe is, that in the pipe a large quantity of pyridine is formed, which is very volatile and stupefying; while in a cigar little pyridine and much colledine are formed. The unpleasant symptoms experienced by persons just beginning to smoke, or who smoke in excess, as well as the poisonous effects of tobacco-juice, are not due to nicotine, but to the pyridine and picoline bases; and they have probably been attributed to nicotine because these bases, especially those having a high boiling-point,

greatly resemble nicotine both in smell and in physiological action, producing contraction of the pupil, difficult respiration, convulsions, and death. They do not act so quickly when injected under the skin as when taken into the stomach, and their action is less rapid than that of nicotine. Other plants which are sometimes used for smoking, though they contain no nicotine, such as dandelion, willow-wood, and stramonium, yield pyridine bases whose action is very like those from tobacco, though rather weaker. Pure picoline from Boghead coal had a similar action; and its vapour was poisonous, producing irritation of the respiratory passages, slight convulsions, and death. None of these, except the bases from willow-wood, produced contraction of the pupil. The authors consider that the effects produced by opium-smoking are not due to the alkaloids in the opium, but to the bases formed during its combustion; and that the difference between it and tobacco is owing to different bases being formed by their combustion.—*Brit. Med. Jour.*, May 11, 1872, from *Arch. Pharm. Chem.*, cxlvii. p. 150.

—

12. *Carbolic Acid and its Therapeutic Properties.*—Dr. ERNEST LABBÉE, in a very elaborate paper on this article, after alluding to its chemical characters, refers to the fact that it is a violent poison to all living beings, and is especially remarkable for its toxic action on microscopic forms of life, both animal and vegetable; and hence, as is well known, it has been extensively employed, on theoretical grounds, in the treatment of accidents or injuries or diseases, the peculiarities or complications of which are supposed to be influenced by the presence of minute living organisms. Dr. Labbée treats at length of the experiments of modern observers, who are said to have traced living germs in the products of fermentation, and even in the miasms from the human body, but he neither denies nor confirms their statements, and in the same spirit he refers to the views entertained and published as to the connection between the phenomena of disease and the development of the morbific germs. Carbolic acid has also been strongly recommended as a disinfectant, its efficacy in this respect being supposed to be due to the power it has of destroying the life of the minute organisms which are assumed to be the causes of epidemic and infectious diseases; but in this respect, also, Dr. Labbée seems to think that the theory on which its use has been founded is not well established, while in practice its efficacy is still doubtful. The physiological effects of carbolic acid are local and general; when applied to the skin or the mucous membranes, it acts as a caustic; when given internally, the effects vary with the dose, but when this is large the acid acts as a violent poison. Among other effects which it produces, there is a notable diminution in the temperature of the body; and with respect to its elimination from the system, this process seems to take place from the lungs, and perhaps also from the skin. Dr. Labbée relates some experiments made by himself on frogs with carbolic acid, and the general results were that it appeared to act on the nervous system, causing convulsions, which were rather epileptiform than tetanic, and its special influence seemed to be upon the cerebellum and the medulla oblongata. In reference to the employment of carbolic acid in surgery and medicine, the author, while copiously quoting the experience of English and French authorities, expresses his own opinion that in surgery it is not superior in efficacy to other remedial agents, such as alcohol, glycerine, etc., and that it has no decided influence in preventing complications in the healing of wounds. At Sedan, where Dr. Labbée made use of the acid very extensively, he did not find that it prevented death from purulent infection after amputation, or that it neutralized the fetor of the wounds. In comminuted and compound fractures, however, he found that dressings of carbolic acid were very useful. In medical practice, Dr. Labbée passes in review the various applications of the acid in various forms of disease, and while he does not confirm the reports as to its efficacy in intermittents, typhus, or the eruptive fevers, he considers it very useful in many kinds of skin diseases; and from its slightly caustic and astringent properties, he thinks it may be useful when given in some forms of atonic dyspepsia. He also thinks that from its power of reducing the animal temperature it might be given advantageously in febrile conditions attended with excessive calorification. On the

whole, Dr. Labbée arrives at the conclusion that, in spite of many illusions in regard to the acid and some exaggerated reports as to its utility, it is really an important article of the materia medica.—*Brit. and For. Med.-Chir. Rev.*, April, 1872, from *Archives Générales*, Oct. 1871.

---

13. *Therapeutic Value of Myrrh.*—Dr. Delioux de Savignac states that myrrh contains in 100 parts 2.60 of volatile oil, 27.80 of resin, 63.70 of gum, and 5.90 of salts and impurities. Its physiological action is comparable on the one hand to the balsamic substances, and on the other to the fetid gum-resins. Its general stimulating properties are more active, and its local action is more lively, than those of benzoin, storax, the balsams of Tolu and Peru, and almost equal to that of tar. Like most resinous compounds, it was formerly regarded as resolvent and deobstruent, and it was prescribed for visceral engorgements. It is possible that in consequence of its stimulating properties it may render resolution more active, but as it was commonly combined with purgatives, these would play a great part in clearing the excretory passages and removing engorgements. It does not itself purge, but there is no evidence that it constipates as the resins generally do. The part of the digestive tube which Dr. de Savignac believes to be most advantageously acted on by myrrh is the stomach. His experience fully confirms the stomachic properties that have been attributed to it from remote antiquity. He has seen painful dyspepsia rapidly relieved and even cured by the use of this gum-resin, either prescribed alone or in combination with other medicines, as bismuth, bicarbonate of soda, etc. Myrrh in these cases relieves the pain, awakens appetite, gives tone to the stomach, and renders digestion more active and regular. Besides these actions, it proves a general tonic in those gastralgiæ that are connected with various chronic diseases, and particularly with anæmia and chlorosis. But this last is often accompanied by amenorrhœa, and as strength returns the catamenia reappear. Cullen regarded myrrh as being only indirectly an emmenagogue; but Sydenham and many others have thought it exerted a direct action on the uterus. Its pectoral properties, he thinks, have been exaggerated, though it may aid other remedies in calming the cough and facilitating expectoration. He has found it particularly useful in vaginal and uterine catarrhs, and especially when applied topically in the form of vaginal injections, containing one to three drachms of tincture or vinegar of myrrh in a quart of water. Mattioli and some others have prescribed it with success in intermittent fevers, but further evidence is required on this point. Alibert admits its value as a topical remedy in skin affections, and it has been largely used for ulcers, for the dressing of wounds, and cases of caries and necrosis, and as an antiseptic in wounds of the soft parts of a bad nature, likely to become gangrenous. For this purpose the tincture of myrrh is best adapted. As an internal remedy, acting as an excellent stomachic, he strongly recommends the following prescription for the wine of myrrh:—

| | |
|---|---|
| Picked myrrh . . . . . | 20 grammes. |
| Rind of Seville oranges . . | 15 " |
| Malaga wine . . . . . | 1½ pint. |

Macerate for ten days, and filter.—*Practitioner*, April, 1872, from *Bull. de Gén. Thérapeutique*, t. lxxxi., livr. 11.

---

14. *Lacto-phosphate of Lime as an Analeptic Medicament in Adynamic Fevers and in Convalescence.*—Dr. R. Blacke extols (*The Practitioner*, February, 1872) the efficacy of the lacto-phosphate of lime as an analeptic in adynamic fevers and in convalescence. "It is at once," he says, "an aliment and an article of food, and a medicament of the highest value. Its administration cannot, like that of alcohol, produce mischievous consequences, and it never depresses the nervous system charged with presiding over the transformations which take place in the nature or form of the elements of our tissues."

In children who, during the process of dentition, or the various critical stages of development, and especially puberty, often present an indifference to, and sometimes a deep disgust for, all kinds of food, whence result atony of all the tissues, and often diarrhœa or constipation—in such cases the patients generally will not tolerate cod-liver oil; but the lacto-phospate of lime, being extremely palatable, is readily accepted by all young patients, and is, Dr. B. asserts, extremely beneficial.

"In aged persons," says Dr. B., "we not unfrequently meet with an almost complete suspension of all the organic functions, and more especially those of digestion and of the various acts connected therewith. The wine of lacto-phosphate of lime, administered at the end of meals, permits digestion, increases the assimilation of alimentary substances, and awakens muscular energy, which is so often abolished at this time of life.

"This sinking of all the organic functions contributes powerfully to give to all the acute affections of the aged (and of those who resemble the aged by a condition of general exhaustion) a peculiar character of adynamia. In these cases, a febrile state excited by any cause brings on fatally such a movement of denutrition that the patient often dies, notwithstanding the most diligent and appropriate treatment. If, as I believe, it is by acting on the ganglionic nervous system, and by suspending to a certain extent a powerful process of disassimilation, that alcohol has rendered such great services and been so very successful in cases of pneumonia and other acute affections marked by an adynamic character, does it not seem more rational to leave untouched the functions of the nervous system, and seek merely to fulfil an indication so tritely put down by one of England's great clinicians?—feed the fever. And if this position be correct, I think I may safely assert that the lacto-phosphate of lime is, of all substances, the one best calculated to act as an aliment and as an excitant of the nutritive functions, in the numerous cases to which it applies."

In another class of diseases of an adynamic character, viz., typhoid fever and typhus, this remedy, Dr. B. states, has justified his most sanguine expectations. In the last stage of typhoid fever, when the acute phenomena have disappeared, "we are often," says Dr. B., "placed between two alternatives: either the organism, exhausted by its recent struggle for life, remains prostrate, and allows only of an insufficient alimentation, or, the appetite being awakened, the too small quantity of gastric juice does not allow the stomach, still much enfeebled, to digest the food which the patient takes.

"Now, in these cases we find in the lacto-phosphate of lime at once the chemical agent of digestion and the natural excitant of nutrition, which permits us to overcome two formidable evils, and to secure a speedy restoration to the normal condition."

---

15. *Antipyretic Action of Quinia and Alcohol.*—BINZ (*Virchow's Archiv*, li.) is inclined to attribute the action of quinia more to its direct effect on the animal fluids than to its nervine action. Some experiments by Naunyn and Quincke, however, appear to have given ground for the idea that it depresses the temperature through the agency of the nervous system. They observed, when the temperature rose after pinching the spinal cord in dogs, that the elevation of temperature could often be counteracted by large doses of quinia. Binz has repeated these experiments with the above-named experimenters, and has observed distinctly in two cases this result. It was observed, in regard to the animals, that, when experimented on, there was great *post-mortem* elevation of temperature and very rapid putrefaction. In those which received quinia these results were almost completely prevented. The negative results often obtained in regard to quinia are, in some cases, to be attributed to the rapid conversion of the substance into the inactive dihydroxylquinia, and in other cases to the fact of its being administered in an insoluble form. Quinia ought to be given in solution. The best form is the hydrochlorate. The above experiments do not yet decide the question whether the action of quinia is dependent upon the nervous system or not. Alcohol seemed to give more precise results. Dogs treated as in the experiments of Naunyn and Quincke received, within an hour and a half or three hours after the operation, about sixty cubic *centimetres* of alcohol diluted with water. In most of the cases, there was a very distinct inhibition of the temperature more marked than with quinia. The *post-mortem* elevation of temperature was almost inappreciable. Alcohol is very rapidly used up in the febrile condition. The action of alcohol

Binz attributes to direct action on the tissue-metamorphosis. A number of facts point to alcohol as being an inhibitor of oxidation in the tissues. From these effects of alcohol, Binz thinks that quinia is more likely a humoral than a nervine agent.—*Brit. Med. Journ.*, May 11, 1872.

---

16. *Eucalyptus Globulus as an Antiperiodic.*—Strong evidence has been adduced to prove that the eucalyptus globulus, a native of Tasmania, but now largely cultivated in the south of France, Spain, Algiers, etc., possesses very decided antiperiodic properties. Two years since Dr. Lorinser, of Vienna, published the results of his observations on the treatment of intermittent fever by the tincture of the leaves of this tree, and Bohn was equally successful with it. (See No. of this Journal for April last, p. 518.)

More recently Dr. Joseph Keeler, chief physician of the Austrian Railway Company, has treated with the tincture of eucalyptus 432 patients. (*Brit. Med. Jour.*, May 11, 1871.) Of these, 310 (71.76 per cent.) were perfectly cured, and 122 (28.24) required to be afterwards treated with quinia. Of the 310 patients who were cured, no paroxysm occurred after the first dose in 202; in the remaining 108, there were one or more subsequent paroxysms, which, however, yielded to repeated doses of the medicine. Quinia had been given without result in 118 of the 432 cases; 293 of the patients had had ague in previous years, and 139 were attacked for the first time in 1871. Of the 122 cases in which the eucalyptus failed, 58 recovered under the use of quinia, 38 were not cured, 10 were sent home, and 16 remained under treatment. Of the 118 cases in which quinia had been given unsuccessfully, 91 recovered under the use of eucalyptus, and in 27 no result followed.

The several types of intermittent fever were represented as follows: quotidian, complicated, 117, simple 73=190; tertian, complicated, 126, simple 95=221; quartan, complicated 16, simple 4=20; quintan, complicated, 1. The complications were, enlargement of the spleen or liver, anæmia or chronic gastric catarrh, paludal cachexia, etc. The remedy was successful in 161 of the 260 complicated cases, or 61.9 per cent.; and in 149 (or 86.6 per cent.) of the 172 simple cases. The percentages of success in the various types were: in tertian, 75.57; in quartan, 70; in quotidian, 67.89. Among the cases in which the first dose of eucalyptus arrested the disease, were 95 complicated and 107 simple; 28 of the former and 20 of the latter had previously been treated unsuccessfully with quinia. In the cases where the paroxysms recurred, there were 70 complicated and 58 simple; quinia had been given without success in 27 of the former and in 15 of the latter.

Of the 432 patients, 353 were men, 46 women, and 33 children. There were 155 patients who were immigrants into the localities; and in these the disease was more frequently attended with complications, and the treatment was less successful, than among the indigenous inhabitants.

The treatment was generally commenced on the fifth day after the first paroxysm of ague; its duration averaged 9½ days, that with quinia in previous years having been 12½ days.

The tincture was made by dividing into small pieces the leaves of eucalyptus obtained through France from the native country of the plant, and macerating in alcohol for three months. Ten pounds of the leaves yielded twenty-five quarts of the tincture. The average dose was two drachms; and the average quantity used for each patient was seven drachms—this, however, varied much, according to the nature of the case and its complications.

Dr. Keller concludes that eucalyptus must be regarded as a very important remedy for ague; but that the plant as cultivated in Austria is less efficacious than that imported from its native soil; that the remedy is of service especially in obstinate cases of ague where quinia has been given unsuccessfully; and that the average duration of treatment by eucalyptus is shorter than that by quinia. He believes that the tincture is the most eligible preparation of the plant, as the essential oil is retained. The cost of a quart of the tincture he calculates to be less than two florins. It has a pleasant aromatic flavour. For women and children, some simple or orange syrup may be added. In the milder cases, two or three teaspoonfuls, taken before the expected paroxysm, are generally sufficient. Where cachexia is present, small doses should be taken night and morning for some time.

17. *Picrate of Quinia.*—Dr. Masse communicated to the Academy of Medicine of Paris the results of his trials with this preparation in intermittent and remittent fevers. He stated that this preparation, though it exercised a curative power in intermittent fevers, was less effectual than the sulphate of quinia. Its bitterness renders its administration difficult; and it has no curative power in bilious remittent fever. Hence it is not a true substitute for the sulphate of quinia.—*La Revue Scientifique*, May 4th, 1872.

18. *Ethyl-chloride of Mercury.*—Dr. Pruemers, of Berlin, states (*Virchow's Archiv*, December, 1871) that, after some experiments on animals, he used this preparation in some syphilitic cases with eruptions. He injected subcutaneously a solution containing $\frac{1}{10}$ to $\frac{1}{5}$ of a grain of the substance, and generally 10–20 injections were sufficient. The injection produced no considerable pain, and no appreciable infiltration or induration of the part, presenting in these respects a marked contrast to the injection of corrosive sublimate. There was also no disturbance of the digestive organs or salivation. He has also administered the agent in the form of pill, the dose being half a grain to a grain, night and morning. In this case also there were no unpleasant results.—*Glasgow Med. Journ.*, May, 1872.

19. *Pulvis Glycyrrhizæ Compositus, a laxative preparation of the Prussian Pharmacopœia.*—Dr. David Page extols this preparation for the treatment of simple constipation resulting from atony of the bowels. "Whether in simple uncomplicated torpor of the intestines," he says, "or in constipation accompanying temporary gastric disorder, the powder, alone or auxiliary to appropriate remedies, is preferable to other preparations of its class. In the former, our object is rather to call into play the peristaltic action of the intestine than to deplete by serous transudation from its walls, and, in the latter especially, no prudent practitioner would run the risk of aggravating the disordered stomach by the exhibition of purgatives possessed of irritant or drastic properties. The compound liquorice powder is composed of the following constituents, so prepared as to form when incorporated an almost impalpable powder: Senna leaves, ℥vj; liquorice root, ℥vj; fennel seeds, ℥iij; sulphur, ℥iij; refined sugar, ℥xviij.[1]

"The active ingredients are sulphur and senna. The action of the former, when administered alone, is frequently accompanied by tormina, and the continued use is apt to cause derangement of the mucous membrane of the upper intestine. The physiological action of sulphur appears to be upon the muscular coat, and less upon the mucous surface, while senna is a more active purgative, more apt to excite tormina, and acts more upon the mucous than the muscular coat. By the aromatic and stimulant properties of the fennel, and the demulcent action of the liquorice, itself a mild laxative, the effects of the more active constituents are judiciously modified.

"The usual dose is a small teaspoonful at bed-time in water, with which it is easily mixable, forming an agreeable draught. Children, to whom Gregory's powder is a terror, readily take it with the belief that it is a sweetmeat.

"That the action of the powder is not to produce catharsis with serous transudation is proved by the motions, which are usually well-formed and soft."—*The Practitioner*, May, 1872.

20. *Sulphovinate of Soda as a Purgative.*—Dr. Rabuteau has taken this salt himself and administered it to others, and finds: 1. That the sulphovinate of soda purges in relatively feeble doses; 25 grammes, or five drachms, are always sufficient; 10 grammes act on children and sometimes on adults. 2. The number of evacuations varies according to the quantity ingested; with

---

[1] This formula is given in the Pharmacopœia Borussica.

a dose of 20 grammes in three glasses of water, it usually produces four or five stools; and from five to eight in doses of 25 grammes. The effects usually begin to manifest themselves an hour after it has been taken. 3. The sulphovinate is the mildest of saline purgatives; it produces no exhaustion or pain, and it may even cause colics previously experienced to disappear, as for instance in certain forms of diarrhœa, which it is capable of speedily arresting. 4. This salt, causing no pain, no abnormal intestinal contraction, acting, in a word, as a type of dialytic purgatives, can be prescribed even during menstruation and pregnancy. 5. In consequence of its very slight flavour when slightly sugared, it is taken without repugnance by the most fastidious, and by children. 6. The sulphovinate of soda ought to be preferred to the citrate of magnesia, since it possesses the advantages, without the disadvantages, of the latter. In the first place, it is more agreeable to the taste, especially when dissolved in Seltzer water; secondly, it cannot lead to the formation of calculus. It is well known that it is dangerous to continue the use of the magnesian salts too long, and no judicious physician would prescribe the citrate to old people, especially to those affected with catarrh of the bladder, lest the ammoniaco-magnesian phosphate should be precipitated.—*Practitioner*, April, 1872, from *Revue de Thérap. Méd.-Chir.* 1871.

21. *A Zootrophic Powder.*—M. Polli, after dwelling on the importance of the presence of the various mineral constituents of the body in food, if the healthy nutrition of the tissues is to be maintained, recommends the following powder, as containing some of the most essential: Phosphate of lime 10 parts; tribasic phosphate of lime, 10 parts; phosphate of soda, 15 parts; carbonate of lime, 10 parts; sulphate of magnesia, 15 parts; chloride of sodium, 10 parts; bicarbonate of potash, 15 parts; oxide of iron, 10 parts; oxide of manganese, 2.5 parts; silicate of potash, 2.5 parts. The dose of this powder is 45 grains daily for children, or double this quantity for an adult. He recommends its use especially—1. In infants at the breast, who are suffering from dentition, or in nurses. 2. In children suffering from osteo-malacia, rachitis, scrofulosis, or chlorosis. 3. In pregnant women, and those suffering from puerperal cachexia. 4. In fractures, and cases of caries of the bones. 5. In tuberculosis, especially when there are vomicæ. 6. In anæmia after hemorrhages, and in leucocythæmia. 7. In convalescence after long illness.—*The Practitioner*, May, 1872, from *Medizinisch-chirurgische Rundschau*, Feb. 1872.

## MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

22. *Experiments on Pyæmia.*—Dr. Burdon Sanderson made a most interesting and important communication to the Pathological Society of London on pyæmia. He began by relating his first experiments as to the effect of inoculating the lower animals with pyæmic liquids. In the autumn of 1867, he injected the purulent liquid contained in the ankle-joint of a patient, who had died a few hours before with metastatic abscesses, general suppurative arthritis, and intense septicæmia, under the skin in a dog and two guinea-pigs. The two guinea-pigs died within short periods (fifteen and twenty days), and exhibited symptoms of great intensity. Both had metastatic abscesses; but in one the lungs were already beset with minute nodules, resembling miliary tubercles. The dog lived seven weeks. In this case there were no secondary abscesses, but miliary tubercles of the liver and spleen. From one of the guinea-pigs, two others were inoculated, of which one died of pyæmic subcutaneous abscesses, without visceral disease; the other, which lived longer, had no abscesses, but tuberculous disease of the lungs. During the same winter, other experiments of the same kind were made, all of which seemed to show that, by the inoculation of pyæmic products, two sets of lesions might be produced: as an imme-

diate result, metastatic abscesses, accompanied by a general typhoid state, which was often fatal; as an ulterior result, either disseminated nodules, at first hard, but afterwards becoming caseous at their centres, or interstitial induration—both forms of lesion having their seat chiefly in the lungs, spleen, and liver, but also occurring in other viscera.

Having stated these facts, which he said had even in 1868 led him to regard it as probable that the two forms of infective lesions—the tuberculous and the pyæmic—were connected together etiologically and genetically, he referred to another fact which resulted from experiments made in 1871, as to the existence of bacteria in animal liquids, and the circumstances which determined their occurrence. These experiments had shown, that whereas bacteria could not be shown to be present either actually or in germ in the healthy liquids or tissues, or in the products of healthy inflammation, they were present potentially in pyæmic liquids—that is to say, that, whereas ordinary pus could be kept for days or even weeks free from bacteria, provided the precautions against "spontaneous generation" were observed, pyæmic pus could not be so kept, and, moreover, possessed the properties of at once determining the development of bacteria in any suitable liquid to which it was added. At that time he had concluded, as he now knew, from insufficient observation, that pyæmic pus did not itself contain visible bacteria.

A short account was next given of certain researches made during last summer, in association with Dr. Klein, as to the channels by which infective poisons were distributed from their centres of origin. Referring to the last occasion on which he had brought the subject of the intimate pathology of tubercle before the Society, and to the doctrine he had then advocated, that tuberculosis is an irritative overgrowth of a pre-existing tissue, he said it had then been shown that the process, in its disseminated or interstitial form, had its seat in a certain tissue, and this tissue had been termed adenoid or lymphatic —both words implying its intimate and special relation with the lymphatic system; but the precise anatomical nature of this relation had been imperfectly made out. No further progress was made till last May, when Dr. Klein came to England with the distinct object before him of co-operating in the investigation of this very question. The field taken up was the peritoneum; the reason of the choice being, that that membrane, and especially the omentum and diaphragm, had already been the subject of investigation, as favourite seats of tuberculosis. Those researches had not merely served to elucidate one or two anatomical facts of very great importance to the pathologist—*e. g.*, the existence of a lymphatic system in the omentum and its distribution, and the mode in which the peritoneum communicates with the lymphatic system—but had rendered it possible to give an account which, so far as the peritoneum was concerned, was tolerably exact and complete, both of the normal process of absorption and of the changes which the absorbing tissues undergo when they are entered by infective agents.

In the course of these experiments, it was found that not only as regarded the property of any given peritonitis to assume the infective character, but as regarded the intensity of the infective results and their duration, there were endless varieties. In one set of cases, the secondary lesions were suppurative, the constitutional disturbance intense, and the fatal result rapid; in another, the lesions were vascular new growths, firm at first, afterwards becoming caseous, the progress slow, and the functional disturbance imperceptible. And then it appeared that in all those instances in which the pyæmia—*i. e.*, the acute character—manifested itself, bacteria were present, not merely in the purulent liquids, but in the blood. Under these circumstances, attention was directed from the effects to the poison itself. Soon after the opening of the Brown Institution, it was found that the practice of the hospital for animals was likely to afford the required material; in short, that pyæmia occurred in dogs under circumstances very similar to those which determined it in human beings; and exhibited similar symptomatical and pathological aspects. A series of experiments were therefore commenced in January last, having for their object to acquire a knowledge of the morbid poison, and particularly to discover by what conditions the variations of its intensity were governed.

With reference to these experiments, Dr. Sanderson would not anticipate the complete account of them in the Report of the Medical Officers of the Privy Council, but would confine himself to giving an account of one series, and exhibiting the action of the pyæmic poison during life, and the *post-mortem* appearances; but before doing so, he would state shortly what he understood to be the true signification of the term pyæmia. He then proceeded to say:—

"The word pyæmia is apt to be used in somewhat different senses, according as the person using it has before him the medical or surgical aspect of the disease. To define it completely we must, I think, take into account its mode of origin, its symptoms, and the anatomical changes which it produces; not confining our attention to either of these to the exclusion of the rest. With this consideration in view I would comprehend in my definition the following propositions:—

"1. Pyæmia originates by the introduction into the living tissues, and eventually into the blood, of a *poison* which is itself a *product of inflammation*.

"2. The action of this poison manifests itself in an alteration of the blood, and in disorder of the vital functions. The former of these is characterized by the presence of bacteria, and by change in the optical characters of the blood, which often becomes obviously more transparent and darker by reflected light than it is naturally. Of the latter, viz., the general disorder of the vital functions, the most prominent phenomenon is fever, which, in the more intense forms of the affection, is followed by collapse which culminates in death.

"3. More remotely, the disease manifests itself in secondary suppurations, *i. e.*, in the formation of metastatic abscesses, which may occur either in the internal organs or underneath the skin. The special characters of these metastatic (as I am in the habit of calling them) infective abscesses are those which are well known both to surgeons and physicians. They have the additional less known character, that the pus they contain is full of bacteria.

"Pyæmia *differs* from tuberculosis in the rapidity of its progress, and in the obvious character of the anatomical changes of which it consists. Whereas, by tuberculosis we are understood to mean anatomically the overgrowth of cells in certain tissues, which we designate lymphatic on account of their proved anatomical relation to the lymphatic system, the secondary inflammations of pyæmia result in the formation of infective abscesses.

"Pyæmia resembles tuberculosis in its mode of origin. Both spring from inflammations; and, so far as relates to the anatomical characters of the lesions, both are inflammations. To both, therefore, the term secondary or infective inflammation is applicable.

"So much for the disease itself. Let me now," says, Dr. Sanderson, "draw your attention to the nature of the poison. I wish to show (1) that every pyæmic abscess contains a poison, which, when introduced either into the circulation or into a serous cavity, produces the symptoms of pyæmia; and (2) that we have this poison so entirely in our possession, and so far under control, that, beginning with an agent so mild in its action that it produces no marked symptoms, we can convert it into an agent of such intensity that it kills in two or three hours with the formidable symptoms seen in the case we have now before us.

"This intensification is effected by a process which may be called cultivation. Dr. Klein made the important discovery that, if a pyæmic liquid were transferred to the peritoneum of a guinea-pig, and allowed to remain there for a couple of days, although it did not at first produce any intense symptoms in the animal itself, its toxic intensity increased in such a degree that, when the transudation-liquid produced in this was injected into another animal, it had acquired the most deadly activity; and that all such extremely active liquids were crowded with bacteria of a peculiar character, the increased number of which seemed to be in proportion to their toxic properties."

Dr. Sanderson then proceeded to exhibit a dog, into the abdominal cavity of which six drops of a pyæmic transudation-liquid had been injected three hours before. The animal was in a state of profound collapse, accompanied with vomiting, purging, and cramps of the extremities. Shortly afterwards, the animal was killed and the abdominal cavity opened. The peritoneum contained liquid slightly stained with blood, which, on microscopical examination, was found to be crowded with bacteria. The intestines were distended with a frothy liquid, which possessed none of the characters of the natural contents which had been found in other cases to be charged with shed epithelium. The internal surface of the whole of the alimentary canal from the stomach downwards was intensely infected, and presented appearances which (as had been found by more careful investigation in previous cases) were due to the separation of the epithelium from the surface of the mucous membrane, and the infiltration of that tissue with liquid.

The material which produced these results was obtained as follows: Pus from a pyæmic abscess of spontaneous, *i. e.* accidental, origin was introduced into the peritoneal cavity of a guinea-pig and allowed to remain there for two days. It was then withdrawn from the guinea-pig and some of it at once injected into the peritoneum of a dog. The dog was affected in exactly the same way as the animal exhibited to the Society. The remainder of the liquid was kept for five weeks in hermetically sealed tubes, after which six drops were injected into the peritoneum of a guinea-pig; this showed its action to have become relatively feeble. After two days, the transudation-liquid produced was (on the day before the meeting) tested with a third guinea-pig and found to be extremely active. This afternoon it was injected into the peritoneum of the dog exhibited.

Dr. Sanderson then concluded by saying: "Such are the facts. The all-important question remains—Do these experiments concern us as physicians and surgeons, or not? I think they do. But what I want is to prove it; for I am well aware, that unless clinical observation comes in aid of pathological experiment, the results of the latter do not tell practically. Let me state what are the lines of inquiry which I desire to see taken up. The first question is —Do the characters which we have shown to be present in the products of acute secondary inflammation in the lower animals, also exist in similar products in man? The second is more important still—Can it be shown that human pyæmic products, when tested by inoculation, possess exactly the same morbific properties as those which are possessed by the liquids to which our experiments relate? It is for answers to these inquiries that I earnestly ask the assistance of hospital surgeons.

"Finally, I would say a word as to the limits of the question now before us. With regard particularly to the question of bacteria, I desire to keep to the bare facts of disease, and not to diverge into discussions as to their origin. It is a matter to me of comparative indifference how they originate. Our observations lead us to conclude, first, that they afford a *characteristic* by which we may distinguish the products of infective inflammations from those which are not infective, and that their number affords an indication of the degree of infectiveness; and, secondly, that their presence in the blood is an indication of that constitutional disturbance which accompanies infective inflammation; not merely when that disturbance assumes the degree of intensity of which we have an example before us, but in the slighter form of irritative fever. If these facts prove to be true, not only in the lower animals but in man, their importance is quite unaffected by any theory which we may entertain as to the origin of bacteria."

After some remarks by the members, Dr. S. replied shortly that, as regarded bacteria in general, he was well aware from his own experiments that the ordinary bacteria of putrefaction possessed no toxic action, and that liquids containing them could be injected into the circulation of living animals without result. As regarded the bacteria of pyæmic products, he had carefully guarded against the inference that they were the efficient causes of pyæmia. He regarded them as only characteristic inhabitants of infective liquids, and therefore very probably carriers of infection. As regarded the word septicæmia, he understood it to mean a state of the blood which was only present in the most intense forms of pyæmia; and he entirely agreed with Mr. Hulke in regarding metastatic abscesses as an accident rather than as an essential of pyæmic infection. The theory that the pyæmic poison was dependent upon an alkaloid, would be disproved in case it should appear that it was incapable of diffusion.

On this question, further inquiries were necessary.—*Brit. Med. Journ.*, May 11, 1872.

23. *Scleroderma Adultorum.*—Dr. J. Neumann calls attention to this remarkable form of cutaneous disease. Though individual cases were recorded by older writers, no special essay upon it appears to have preceded that by M. Thirial in 1845, who published in the *Gazette Médicale* an account of all the cases he had been able to collect, and applied the term "sclerema" to the affection. Since then no less than fifty cases have been reported, and M. Neumann himself adds three more to the list. In most of the cases the skin becomes gradually harder and more tense, though in some instances, and especially when the attack is acute, there is a preliminary stage of œdema. Hebra and Rasmussen distinguish two forms of the disease—"Sclerema elevatum" and "S. atrophicum," of which the former is the acute and the latter the chronic type. The disease has been preceded sometimes by rheumatism, sometimes by recurrent attacks of erysipelas, and occasionally it has appeared to originate in injury; but little is really known of its etiology. The symptoms are very variable; but there is always the disagreeable sensation of tension, impeding movement to a greater or less extent. Thus, if the sclerema affects the neck, the rotation and flexion of the head are interfered with. In sclerema of the face, the facial expression is lost, the natural lines and furrows are smoothed out, and the play of the features is lost; the eyelids droop; the alæ nasi are stretched, and the nose is flattened; the oral opening is contracted, and the movements of the lips rendered difficult. With regard to other parts of the body, the abdominal wall is made tense; the scrotum and penis so tense that no erection can occur; the elbows are bent: the fingers half extended and claw-like; the spinal column is bent forward, and the respiration even impeded. In one of Dr. Neumann's cases violent itching was complained of, and in this case the temperature was considerably elevated, though it is usually depressed. The secretion of the sebaceous follicles does not wholly fail, since pustules of acne have been observed to form. In some instances the secretion of sweat seems to be entirely arrested, but not in others. The disease has been observed to be associated with erythema, erysipelas proceeding to vesication, impetigo, ecthyma, eczema, partial teleangiectasis, ulcerations, and acne. It is more common in females than in males, and the majority of cases have occurred between the ages of twenty-five and forty, though one case is recorded in a patient aged six, and in another aged seventy-two. The pathological conditions of the skin that have been discovered under the microscope are hypertrophy and condensation of the subcutaneous cellular tissue, with coincident atrophy of the adipose tissue, deposit of pigment in the rete Malpighii, around the vessels, in the cellular investment of the several ducts, in the outer-root sheaths of the hair, and in the sebaceous follicles. The pigmentation, however, appears to bear no relation to the intensity of the disease, the densest parts being often the lightest colored. In one of Dr. Neumann's patients the epidermis was found to be unaltered, the cells of the rete Malpighii were increased in number, and formed wart-like processes, dipping into the cutis, not pigmented. The fibres of the cutis formed large and strong bands that preserved the characters of connective tissue, and were intermingled with thick trabeculæ of elastic tissue. Collections of cells occurred in the deeper parts of the corium, and in the panniculus adiposus, the fat of which was much atrophied. The sweat-glands were individually much hypertrophied, and the smooth muscular fasciculi were also much increased in size. The vessels running in the cutis were large and filled with blood, but the branches running towards the papillæ were small and empty. The hairs were small and woolly, but the sebaceous follicles were large. No treatment has been hitherto suggested that possesses any value in curing, or even in staying the progress of the disease.—*Lancet*, March 9, 1872.

24. *Pathology of Herpes Zoster.*—Dr. O. Wyss had the opportunity of carefully watching during life, and examining after death, a patient of von Witte's, of Rheinau, suffering from herpes. The patient was sixty-eight years of age, and on September 16th he had headache and febrile symptoms. On the 19th scattered

vesicles appeared of herpes labialis. On the 20th the right side of the forehead, and nose and cheek as far as to the border of the lower jaw, were injected. On the 22d the right eye itself was inflamed, and on the 23d the left. Two days afterwards an eruption of herpes appeared on the right side of the face, which affected the cornea and conjunctiva. On the 28th the patient died. The post-mortem examination was conducted with great care. The herpetic vesicles and scabs were very accurately limited to the right side, and to the parts supplied by the first branch of the trigeminal nerve. The left eye was perfectly normal. The nerve above mentioned was found to be broader and thicker than that of the left side, of a deeper gray-red colour, of softer consistence, and with the several nerve fasciculi separated by grayish-red soft tissue, containing many vessels. This alteration in its character extended from the point where it entered the orbit to the finest branches as far as they could be traced with the simple lens. The other nerves traversing the orbit were perfectly healthy. Outside the orbit and extending from it to the ganglion Gasseri, the first branch of the fifth was surrounded with extravasated blood. On the próximal side of the ganglion Gasserianum the fifth nerve was normal in appearance, The ganglion itself was larger and somewhat more succulent than the left; upon its inner side was a red mass that appeared to be caused by an ecchymosis. The proper substance of the ganglion was not of a yellowish-white colour. but bright red. The fifth nerve was healthy at its apparent origin from the brain, where it entered the Gasserian ganglion. There were numerous ecchymoses. These were especially visible also in that part of the ganglion whence the first branch of the fifth arises, whilst that from which the second and third branches arise was little altered. Microscopical examination of the skin showed that the papilla and the corium were strongly infiltrated with cells. In some parts the rete was preserved, in others, together with the upper layer of the corium, destroyed. The fasciculi of connective tissue on the forehead exhibited an infiltration of cells, especially in the vicinity of the vessels of the sweat-glands; where the cutis was most deeply ulcerated these fasciculi presented a lustrous, homogeneous character, corresponding to the vitreous swelling of Neuman, or hyaline degeneration of O. Weber. The cornea was abundantly infiltrated with cells, especially in its upper layers; the ulceration of the surface penetrated to the substantia propia. This is an important communication, and shows conclusively that herpes zoster is a consequence of inflammation of the corresponding spinal ganglion and of the nerve traversing it.—*Lancet* May 4, 1871.

---

25. *Alcoholic Paresis and Paraplegia.* By J. LOCKHART CLARKE, M.D.—The habitual and excessive indulgence in the use of alcoholic drinks is so frequently followed by partial or complete paralysis of the lower extremities, that no doubt can be entertained that alcohol and paraplegia do often stand to each other in the relation of cause and effect. Many striking cases that have come under my own care support this inference in a very convincing way, so that I think Drs. Handfield Jones and Wilks have done good service in bringing the subject prominently before the profession.

On examining the bodies of persons who have died either in a state of intoxication or during a course of excessive indulgence in the use of alcohol, particularly in its undiluted state, almost every organ and tissue is found to be more or less altered in appearance. The mucous membrane of the pharynx, œsophagus, stomach, small intestines, and bronchial tubes is red and injected. The liver and kidneys, substance and membranes of the brain and spinal cord, are in a variable state of congestion. In chronic cases of alcoholism we find more or less atrophy of the cerebral convolutions, and effusion of fluid on their surfaces, with thickening and adhesions of the membranes.

On examining such persons during life, we find a train of symptoms, that are quite in accordance with these post-mortem appearances. The mucous membrane of the fauces is unusually red and injected; a viscid, tenacious, or cream-coloured mucus hangs about the back of the pharynx and soft palate, exciting vomiting on rising in the morning; a sensation of rawness or heat is sometimes felt along the œsophagus, particularly on drinking warm or spirituous fluids;

the stomach is irritable. and vomiting is easily excited. A viscid and tenacious mucus collects during the night on the membrane of the bronchial tubes, causing more or less shortness of breath, or oppression of the chest on waking in the morning, and exciting cough, which is frequently attended by vomiting. The skin has frequently a dirty yellow tint, although sometimes a remarkable clearness and freshness of color is preserved, especially in fair persons. The conjunctivæ are often thick, injected, and dirty-yellow.

Different individuals suffer from a variety of nervous symptoms—from giddiness; a sensation of being lifted from the ground, or "taken off their legs," as I have heard them express the feeling; an alarming sensation of choking or suffocation on dropping off to sleep at nights; occasional numbness or "pins and needles" in the fingers and toes; or acute pains beneath the nails; a dull, aching pain across the loins, or an acute pain on bending or on rising from the sitting posture; a darting or lacerating pain in the lower extremities during the act of progression.

The muscular system is more or less affected by weakness, by spasm, or by the withdrawal of voluntary control. The hands and arms, and sometimes the whole body, are tremulous, with frequent fibrilla quivering of the muscles, particularly about the face. Voluntary movements are imperfectly or awkwardly performed. Even when there is no tremour of the hands, delicate operations—such as writing—are clumsily performed, and are irksome or distressing. The walk is more or less unsteady, and I have often noticed that in progression each foot is alternately carried inwards, and almost in front of the other. The articulation is sometimes peculiar and indistinct from partial loss of control over the muscles of the lips. The individual loses his accustomed energy, is careless of his own interest, and feels himself unfit for the performance of his ordinary duties, until he has resorted to his usual potation, or obtained from the druggist a "pick-me-up." For this distressing state I have found nothing so useful as full doses of nitro-hydrochloric acid, with a little of Battley's sedative solution; two or three doses, even, sometimes act like a charm. After relieving the bowels by saline aperients, I combine the acid with quinia, perchloride of iron, or small doses of strychnia. The occasional use of the Turkish bath is also beneficial.

If the individual persists in the excessive use of alcoholic drinks, partial or complete paralysis, and particularly paraplegia, not unfrequently results.—*Lancet*, March 30th, 1872.

—

26. *Leucocythæmia accompanied by Alteration of the Marrow of the Bones.*—E. Neumann relates the following case:—The patient, æt. 30, presented during life all the symptoms of splenic leucocythæmia; he died from repeated hemorrhages. After death there was found considerable hypertrophy of the spleen and liver, and the usual alterations of the blood. The parenchyma of the spleen and liver presented all the characters of leukæmic hyperplasia; the liver also enclosed a whitish nucleus of some size, in which a collection of lymphatic cells had taken the place of the hepatic cells. The marrow of the bones presented very curious lesions, especially observed in the ribs, the sternum, a vertebra, the diaphysis of the humerus, and the diploe of the cranium. At all these points the marrow presented a uniform greenish yellow colour, traversed by a few small red veins; it had a ropy consistence and resembled creamy pus. The microscope revealed white corpuscles of the blood, of varied form and in countless numbers—perhaps, in the course of transformation into red corpuscles. These elements were inclosed in a filamentous substance, containing mucine and very slightly vascular. The bloodvessels were represented by some isolated arterioles. The walls of the larger of these vessels were infiltrated with lymphatic corpuscles; those of the little arterioles were formed by slender fusiform cells, elongated as in the spleen. These vessels were almost exclusively filled with red globules. The author proposes that a myelogenic leucocythæmia should be admitted in addition to a splenic and lymphatic. The capillary network being wanting, the blood is brought by the arteries and thrown directly into the pulp of the marrow, which is rich in cells, and it is probably returned into the venous canals mixed with the elements of this tis-

sue. The presence in the blood of red globules incompletely developed, only met in the marrow of the bones in health, is also explained.—*Archives Gén. de Méd.*, February, 1872, from *Arch. der Heilkunde*, xi., 1–15.

27. *Caries of the Vertebræ and Disease of the Cord.*—Dr. C. FROMMANN records (*Virchow's Archiv*, December, 1871) a case of this, the primary affection in which was caries, beginning in the eighth dorsal vertebra, but extending to the seventh and sixth, which were found affected in a minor degree. The spinal cord was secondarily affected, its condition after death being analogous to that seen in tabes dorsalis, and to which, from its anatomical character, the name gray degeneration has been applied. The first symptoms of disease of the nervous system were pains in the region of the nerves which proceeded from the diseased vertebræ or their neighbourhood. After these pains had existed for a year, pain and paralysis of the lower limbs appeared; and the paralysis became complete within a few weeks of its first appearance. Along with the affection of the lower limbs, the arms presented involuntary contraction of individual muscles, and of the adductors. In the lower limbs, in addition to the motor paralysis, there was also marked diminution of sensation; pricking, pinching, or pressure on the skin being only indistinctly, or not at all felt. The application of a wet sponge to the legs was not appreciable to the patient till the temperature of the water had been raised to 45° C. (113° F.). Reflex irritability was increased, movement being elicited by pricking or pressure, but especially by the application of a sponge containing water at an elevated temperature. These movements occurred several seconds after the irritation, and a still longer interval elapsed before the patient became conscious of them. After seven weeks bed-sores formed, and the patient succumbed to these. The symptoms described resemble considerably those of myelitis, and it was expected that the inspection would reveal inflammation of the cord, communicated through the membranes from the diseased vertebræ. It was found, however, that the pia mater presented only the slightest degree of inflammation, and there was no trace of any communication of inflammation from the dura mater to the pia mater. The meninges being thus practically free, it appeared that the disease consisted of an irritation of the bloodvessels and the connective substance (neuroglia) of the cord itself. The neuroglia was swollen, and had begun to undergo fibrillation, though the affection was comparatively slight in degree, and the nerve fibres very little destroyed. The disease was thus in a comparatively early stage, but still presented the pathological changes found in gray degeneration. The distribution of the disease was, however, considerably different here from what is usually seen in gray degeneration, the lateral columns being simultaneously affected with the posterior, whereas, it is well known that in gray degeneration it is usually the posterior columns alone which are involved. To this, as well as to the fact that the disease had such a rapid course, the author ascribes the great difference in the symptoms from what is usually seen in gray degeneration of the cord.—*Glasgow Med. Journ.*, May, 1872.

28. *Treatment of Dropsy.*—Dr. F. T. ROBERTS, in an instructive paper on this subject (*Practitioner*, May, 1872), calls attention to the following measures which may be employed with advantage in different cases, and in many two or more can be combined. 1. The maintenance of *rest* and of an *appropriate position*. 2. The use of baths, both *general* and *local*. 3. The employment of regular and systematic *pressure*. 4. Removal of the fluid by *operation*. One or other of these may be employed with advantage in different cases, and in many two or more can be combined.

1. The object of *rest* and *position* is to place the parts affected in a posture unfavourable to the action of gravity, so that the veins may not be over-distended, or the fluid tend to accumulate in dependent parts, and thus, with the aid of rest, to promote the absorption of what has already collected. It is in the case of anasarca of the legs, and œdema of the scrotum, that attention to this point proves most serviceable.

2. He advocates having recourse to the *regular* employment of some effec-

tual bath if it is desired to excite the excretory functions of the skin sufficiently to produce any marked benefit. If it can be used, a general bath of course acts best, and either the hot-air or vapour bath is to be preferred; it is especially in the general dropsy of Bright's disease that these are valuable. In many cases, however, especially in cardiac affections, the patient cannot bear a repetition of either of these, and under these circumstances I have found marked benefit from the application of local heat and moisture in the following simple manner, by which the parts are kept in a perpetual local bath. Each leg is wrapped up, from the hip down, in a large flannel, wrung as dry as possible after having been dipped in very hot water, and this is enveloped in a piece of mackintosh of sufficient size, which prevents evaporation and cooling; the flannels are changed about every hour, care being taken to avoid chilling the patient, and the legs are well dried before a fresh application is made. I have often been surprised at the very satisfactory results of this plan, both in hospital and private practice, if persevered in for two or three days, and there is no difficulty, as a rule, in following it out.

3. Considerable advantage may be obtained by the employment of steady and continuous pressure, applied by means of bandages, or some elastic apparatus, care being taken that it is made properly and uniformly, varying its amount according to the nature of the case. Not only is it useful in itself, but it materially helps another mode of treatment, hereafter to be considered.

In local dropsies, the result of venous obstruction, this does more good, he says, than anything else.

4. The early and, if necessary, repeated performance of *paracentesis abdominis* in appropriate cases of ascites is strongly advocated.

Puncturing the legs and scrotum, when considerable œdema exists in these parts, is also recommended. In cardiac dropsy a few punctures, repeated for some days, may, he says, give material help in removing the fluid altogether, at all events for a time, by relieving the over-distended vessels, and thus enabling them to absorb. Of course permanent benefit is not to be expected in these cases, but it is a great thing to relieve the very unpleasant feelings associated with this form of dropsy. In the case of the legs, it is below the knee that the punctures should be made, as, if they are made above this point, urine may come into contact with them, and lead to erysipelas. It is unnecessary to make large incisions, the punctures produced by ordinary harelip pins answering very well. Several may be made at intervals in dependent parts, also on the dorsum of the foot, if required; and they may be repeated, if necessary, so long as there is no sign of irritation. It is advisable to wrap up the limbs in cotton-wool and flannel, which should be frequently changed. As regards the scrotum, this may be punctured in several points on both sides, and then well fomented. Great care must be taken to keep this part clean. In some cases the operation causes it to become indurated, and this condition resists the further accumulation of fluid.

---

29. *Relative Efficacy of Tincture of Hyoscyamus, Bromide of Potassium, and Chloral, in single doses, on Maniacal Excitement.*—Dr. John A. Campbell, of Garland Asylum, Carlisle, states that being accustomed to give some of the excitedly noisy, the restless, and other cases labouring under insomnia, as well as the recent acutely-excited cases, some sleep-causing medicine nightly, and having frequently given the above-named medicines, he thought that if he gave them for some time in the same doses to the same patients, he might be able to form a tolerably accurate idea of their relative efficacy in the following respects: 1. Which was the surest sedative to excitement? 2. Which was the most certain sleep-producer? 3. Which acted most quickly? 4. What is about the equivalent dose of each? The method he adopted to arrive at the result he wished to attain was, that to all the excited, and then to all the simply sleepless patients, whom he could get to take medicine, he gave on consecutive nights two drachms of tincture of hyoscyamus, one drachm of bromide of potassium, and thirty of chloral, frequently repeating these experiments. He considered that by giving the medicines on alternate nights, if the patient's taste changed, it would do so for all the medicines; and if any of the medicines had a cumulative ten-

dency, it would not show itself. The number of cases selected was fourteen. To these he gave each of the medicines forty-six times. The total results he got were, that tincture of hyoscyamus produced sleep on forty-two occasions, bromide of potassium on thirty-eight, and chloral on forty-three occasions. The average time in which effects were observed with tincture of hyoscyamus was 1 hour and 7 min., with bromide of potassium 1 hour 15 min., and with chloral 48 min. The average time the effects lasted with tincture of hyoscyamus was 4 hours 6 min., with the bromide, 3 hours 54 min., and with chloral, 4 hours 26 min. Thus it appears that thirty grains of chloral produced effects more quickly, sleep more frequently, and its effects lasted longer than two drachms of tincture of hyoscyamus, and this dose of tincture of hyoscyamus was more powerful in these respects than one drachm of bromide of potassium. In a second series of experiments, Dr. Campbell increased the dose by one-half, that is he gave of tincture of hyoscyamus, ʒiij.; of bromide of potassium, gr. xc; and of chloral, gr. xlv. He only gave this dose, however, to the more excited of the patients. The total results he arrived at were (each of the medicines having been given on thirty-one occasions) that tincture of hyoscyamus produced sleep on twenty-four occasions, bromide of potassium on eighteen, and chloral on twenty-eight occasions. The average time in which effects were observed with tincture of hyoscyamus was 35 min.; with bromide of potassium, 46 min.; and chloral, 29 min. The average time the effects lasted with tincture of hyoscyamus was 3 hrs. 39 min.; with the bromide, 3 hrs. 31 min.; and with the chloral, 4 hours 27 min. Chloral in this dose, as in the former, shows its superiority, having produced its effects more quickly, sleep more frequently, and its action continuing longer than either of the other medicines. Tincture of hyoscyamus retains its place next to chloral. Finally, in a third series of experiments, he increased the dose to double that with which he had begun. He gave these doses in two cases only—to one of them on five occasions, to the other on one. In this dose again chloral proved more active than tincture of hyoscyamus and the bromide proved utterly inefficacious where so much excitement existed. The results of these experiments, which, however, from their limited number, he considers ought not to be regarded as conclusive, are—1. That both chloral and tincture of hyoscyamus are sure sedatives to maniacal excitement. 2. That of these two medicines chloral is the most certain sleep-producer. 3. That chloral acts more quickly than tincture of hyoscyamus. 4. That though bromide of potassium, in such doses, is a sedative to maniacal excitement, and to a certain extent hypnotic, yet it is not a sufficiently powerful sedative to allay intense excitement, or an hypnotic to compel sleep where great insomnia exists. 5. That a two-drachm dose of tincture of hyoscyamus is not quite equivalent to thirty grains of chloral. Two and a half drachms would probably be as nearly an equivalent as could be given. From the different sedative and soporific powers of bromide of potassium, he thinks it is hardly possible to form an idea of an equivalent dose. It appears to him to be useful only when the excitement or insomnia is of a slight character.—*Practitioner*, April, 1872, *Journal of Mental Science*, Jan. 1872.

30. *Treatment of Pneumonia by Acetate of Lead.*—Dr. STROHL, of Strasburg, strongly recommends the use of acetate of lead in pneumonia; and, discussing the whole subject of the treatment of that disease, he comes to the conclusion that lead is the safest and best remedial agent. He compares the results obtained by different modes of treatment, such as the expectant plan, bleeding, emetics, mixed treatment of bleeding and tartar-emetic, etc.; and he claims for his own plan the most satisfactory results, for the ratio of mortality in the cases he treated was only 1 in 9.66; but, even if the mortality were the same, he claims for lead certain advantages which it possesses over other remedies, and especially its innocuity and the rapidity of its curative action. Tartar-emetic causes vomiting, gastro-intestinal irritation, and prostration, but acetate of lead does nothing of the kind, and Dr. Strohl found that it did not even cause a threatening of colic. Again, the objections to other modes of treatment are rather numerous; bleeding is inapplicable in the extreme of age and in bad constitutions; tartar-emetic is contra-indicated in cases accom-

panied by inflammatory or other serious affections of the stomach and intestines, and in diarrhœa and phthisis; but in all these cases lead may be given. Dr. Strohl sums up his views as to the efficacy of acetate of lead in the treatment of pneumonia to the following effect: It is preferable to tartar-emetic, digitalis, and veratria, because its action is more certain, more rapid, and more free from inconvenience, and it has never caused any bad symptoms. It never constipates, but sometimes causes diarrhœa, and it may be given to persons of all ages. Under its use the pulse is lowered, and the heat and fever are reduced, and convalescence is very rapid when there are no persistent complications.—*Brit. & For. Medico-Chir. Rev.*, April, 1872, from *L'Union Médicale*, October 12, 1871.

31. *Pepsine Wine in Diarrhœa of Young Children.*—Dr. A. Davidson extols (*The Practitioner*, March, 1872) the efficacy of pepsine wine in the diarrhœa often observed in children from one to two years old, resulting from feebleness of the digestive powers, and in which a large proportion of the food is not assimilated, but passes off in an undigested state. Aromatic and astringent mixtures are useless in these cases, but Dr. D. says that pepsine wine given in doses of a teaspoonful three or four times a day with the food, soon effects a cure. This statement, though it has no claim to novelty, is interesting as confirmatory of the observations of Dr. J. C. Reeve, of Dayton, Ohio, published in the number of this Journal for July, 1865, pp. 55–58.

32. *Treatment of Diabetes Insipidus.*—M. Gueneau de Musy, in a clinical lecture at the Hôtel-Dieu, recommends the administration of full doses of belladonna and sulphurous baths, in the treatment of diabetes insipidus. He has twice found belladonna to accidentally produce anuria. Its use in incontinence of urine is well established. Systematically employed in diabetes insipidus, it has diminished the quantity of urine passed from ten pints to two pints *per diem.* The sulphurous baths bring the skin to the relief of the kidney.—*Brit. Med. Journ.*, June 1, 1872.

33. *Xylol in Smallpox.*—Dr. Russel relates (*Glasgow Med. Journ.*, May, 1872) a number of cases of smallpox treated by him with xylol as recommended by Zuelzer, of Berlin, and Burkart, of Stuttgart, and in none of them did it produce the slightest obvious effect on the progress of the disease.

34. *Glycerined Vaccine Lymph.*—E. Muller, Director of the Berlin Vaccine Institution, adverts (*Berlin Klin. Woch.*, April 29, 1872) to the large scale in which revaccination had to be carried on during the late war, where so many troops had to be protected against the smallpox prevailing in the enemy's country, while vast numbers of French troops were "interned" in Germany. Before the introduction of this new plan the military surgeons had often very great difficulty in obtaining the requisite lymph. They obtained as much as they could from the establishments, and then revaccinated from the finest revaccination pustules that presented themselves. Some danger was incurred thus of also transmitting disease, while the lymph derived from revaccination is supposed to possess less protective power.

Military surgeons are saved all trouble now on this score by the employment of glycerined lymph. Six years have now elapsed since the discovery of its advantages, and Dr. Muller, during this period, has been untiringly endeavouring to make these known more widely. The late war, occurring amidst the prevalence of smallpox, has amply demonstrated its value; for it was found that, on the outbreak of the disease, the only provision in Germany of lymph capable of meeting the emergency existed at the Berlin Institution, and supplies had to be obtained from it for revaccination in Baden, and for revaccinating the Saxon and Wurtemberg armies. Without the aid of glycerine the immense supplies for both civil and military practitioners, at home and abroad, never could have been sent; and the army surgeons can best judge what influence the withholding of such revaccination might have had on the course of the campaign. Still, in general, only enough lymph could be sent to set the revaccination process going, the revaccinating from arm to arm still continuing to be practised. In fact, but few military surgeons prepare the glycerined lymph themselves, although this can be so easily done. If during the summer each were to vaccinate a few healthy children, he might lay by a stock of glycerined lymph (which keeps for months or years) that would enable him to revaccinate whole batches of recruits on the same day.—*Med. Times and Gaz.*, June 1, 1872.

35. *Reno-vesical Cantharidism, and the Remedies in general use for its Relief.*—M. GUBLER remarks that the noxious influence of cantharides is especially marked on the kidneys and bladder, the characteristic symptoms being well known. Morel-Lavallée distinguishes three forms of cystitis. The first, which is the simplest, is recognized by the presence of albumen in the urine; in the two others, which only differ in minor points, there are pains in the perineum and abdomen, with strangury and the discharge of false membranes. He thought that the active principle of cantharides set free by the acidity of the urine occasioned vesication of the bladder: but M. Bouillaud gave the true pathognomy of the symptoms observed. He showed that the topical action of cantharides is on the kidneys, of which the internal membrane experiences its vesicating action, in consequence of which the urine becomes charged with albumen. It is really an endonephritis, and not a cystitis, that constitutes the point *du départ* of the albuminuria produced by cantharides. If the renal irritation becomes more severe, a nephritis parenchymatoso is established. It is astonishing that a substance which proves so irritating to the tubuli of the kidneys should be without effect on the bloodvessels. But M. Gubler shows that the albumen of the blood plays an important part in preventing the production of the usual effects of this and similar substances by seizing upon and forming combinations with them, so that their powers are rendered latent and are only manifested when set free by the renal gland into a fluid that contains no albumen: and he considers this to furnish a truer explanation of the peculiarities presented by cantharidine in the blood and in the urine respectively than that advanced by M. Bouillaud, who believed that whilst in the blood the cantharadine was rendered inert, owing to its combination with some alkali, as soda; for M. Gubler has satisfied himself that the combinations of cantharidine both with potash and soda are possessed of considerable activity. Important corollaries flow from this proposition of M. Gubler's, that cantharidism is neutralized in the vascular system by the proteic matters of the blood: thus it is obvious that it is useless to prolong the application of a blister after the vesicle has risen, since, starting from this point, its contact ceases to be immediate, and the solution of the cantharidine in the albuminous or albumino-fibrinous serum loses its irritating properties. Hence also cantharidine exerts its irritant action on all the emunctories which discharge fluids destitute of albumen, such as sweat and tears, and perhaps too the parotid glands. On the other hand, it escapes unperceived into all serous cavities, and probably into the submaxillary and sublingual glands, the saliva of which is viscous and stringy. In M. Gubler's wards, 176 blisters were applied in one year, and in 16 instances more or less marked symptoms of cantharidism were observed, or 1 in 11; but in four of these the symptoms were very slight indeed. In one only was there severe hæmaturia. He does not believe that camphor possesses the slightest power of preventing the injurious effects of cantharides.—*Practitioner*, April, 1872, from *Bulletin Général de Thérapeutique*, Dec. 30, 1871.

## SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

36. *Adhesion between Prepuce and Glans Penis in Children.*—We learn from the *Jahrbuch f. Kinderheilkunde* that the investigations of JOH. BÓKAI regarding what he terms cellular adhesion between the prepuce and glans penis in children, were first published in January, 1860, in the Hungarian language.

A full exposition of the results of those investigations are interesting from their important practical bearing. This exposition we borrow from the *Centralblatt für die Medicinische Wissenschaften*, January 13, 1872. M. Bókai refers the prepucial adhesion of which he treats to almost entirely physiological causes, and only under especial circumstances admits it to be strictly pathological. The origin of the adhesion is, he believes, to be laid in the fœtus by the close and undisturbed contact which then exists between the superficial cells of the lining epithelium of the prepuce and the surface of the glans. They are in this condition slower in hardening. This process is, likewise, interfered with by the cells of the epithelial layer of these parts being more constantly and fully bathed in fluids than elsewhere, which favours the adhesion of the opposing surfaces. This condition of things continues to a greater or less extent, in different cases, for some time after birth; but diminishes with the advance of the child's age.

In 100 children, carefully examined by Dr. B., there were 30, aged from five *hours* to six *months*, in 22 of which the adhesion was of the highest degree; 20 were from 7 *months* to 1 *year* old; in 9 there was extensive adhesion; 15 of the boys were between 1 and 2 years old, of whom 5 exhibited a high degree of adhesion; 16 were between 2 and 3 years old, adhesion prominent in 3; among 11, from 4 to 7 years old, one only exhibited extensive adhesion, while in 8 boys, from 9 to 13 years old, no degree of adhesion was present. In all the remaining cases there was adhesion, but to only a slight extent. Dr. B. divides the adhesion formed between the prepuce and glans into *three* distinct grades. 1. Where the adhesion, commencing at the *corona glandis*, extends thence backwards, general with normal width of prepuce, but often also with an abnormal narrow and short prepuce. 2. Adhesion extending from the centre of the glans backwards; with normal width and length of prepuce. 3. Adhesion extending from the apex of the glans to the sulcus beneath the corona glandis. In new-born infants, in such cases, the external orifice of the urethra is often found to be closed. In all the three grades of adhesion pain is caused when an attempt is made to retract the prepuce beyond the line at which the adhesion commences, and the disruptured surfaces present a torn and reddened appearance, even a discharge of blood may be the result when the adhesion has been very intimate. In the sulcus behind the corona glandis there is always a considerable collection of a cheese-like matter, the removal of which is sometimes attended with difficulty. It is the presence of this cheese-like matter, according to Dr. B., which causes the pulling at the penis so often observed in children, and from which the superficial cracks so often seen on a line with the adhesion result, and from which blood has been known freely to escape, and a circumscribed inflammation produced at the edge of the prepuce. Finally, there is painful micturition, a symptom which may be the first to call the physician's attention to the existence of the adhesion of the prepuce. In regard to the treatment of the several grades of the adhesion referred to by surgical interference, Dr. B. remarks, that inasmuch as there is a tendency to a spontaneous disappearance of the adhesion as the child grows in years, and his organs increase in bulk, the separation of the adhesion by the knife should never be resorted to excepting in cases where the adhesion has resulted from some strictly pathological cause, or there is retention of urine, or where *balanitis* has set in. By retracting the prepuce with one hand, and with the other, armed with a blunt sound, tearing apart the adhesions, all difficulty may be overcome. Dr. B. had never occasion to resort to any cutting instrument. In those in which there has taken place spontaneously a partial separation, forming a deep sac-like cavity, Dr. B. has succeeded in removing the remaining adhesion by the forcible injection of water into the cavity formed as above. The adhesion being entirely overcome, the cheesy matter should be removed from the base of the glans, both the surfaces that had been adherent, after being properly cleansed, should be anointed with olive oil or glycerine, and the prepuce brought forward and placed in its natural position. If any hemorrhage ensue from the disruption of closely adherent adhesions, it may be easily arrested by the application of cloths wetted with cold water. D. F. C.

37. *Treatment of Goitre.*—Dr. C. SCHWALBE has contributed to *Virchow's Archives* (December, 1871) a very interesting and practical paper on this subject. The results arrived at are based on 106 cases, of which notes were made. In order to the treatment of goitre, it is of consequence to decide as to the exact nature of the swelling, and so the author gives a short description of the various kinds chiefly with the view to diagnosis. There is first the glandular form (struma follicularis mollis of Virchow), which consists of a hypertrophy or hyperplasia of the thyroid gland, and which forms a soft elastic tumour, not unlike a lipoma. There is further the cystic goitre, in which it is usually easy to detect fluctuation. The commonest remaining forms are the fibrous and the vascular, the former distinguished by its hardness. As an important aid to the diagnosis, the author nearly always resorts to puncture with a perforated needle, and the proceeding is of particular advantage in distinguishing between glandular tumours and cysts. The glandular tumours not unfrequently give a false feeling of fluctuation; and on the other hand it is often impossible to detect fluctuation though the tumour is cystic, and in these circumstances puncture is of great service, the fluid which issues when the disease is cystic at once determines its nature. The fibrous forms are also distinguished on puncture by the density of the tissue, and the vascular by the free flow of blood. In his treatment the author trusts in the first place to the internal administration of iodide of potassium, combined in almost every case with the local injection of tincture of iodine, or simple alcohol. In very recent cases the use of the iodide (he gives it to the amount of 1 gramme, or about 15½ grains daily) is sufficient to dissipate the swelling, but usually injection is also necessary, except in the vascular forms. In respect to the material to be used in injection, the author believes that the benefit derived from the injection of tincture of iodine depends chiefly on its alcohol, and that rectified spirit is in most cases of equal use. The internal use of KI or I is undoubtedly of great benefit, but there is no reason to believe that the iodine has any special effect when applied locally, and the author has found that the injection of alcohol with the internal administration of the iodide has as good results as the injection of the tincture of iodine. To the surgeon, there can be no comparison of the cleanliness and convenience of alcohol as compared with the tincture of iodine. The quantity injected varies in different cases, in the glandular forms only small injections were used, about 10 to 20 drops; and even smaller quantities in the fibrous. But in the cystic form much larger quantities were used, as much as 4 grains being injected into a cyst as large as a duck's egg. The author has not made much use of electrolysis in the treatment of goitre; and he employs it chiefly for the vascular and fibrous forms. Incision of the cystic form he has very seldom resorted to, and only where the tumour was very large. The plate which accompanies the paper is illustrative of a case cured by this method. In conclusion, it is stated that by these means he has only once failed to effect a cure, this case being one of the very hard fibrous form; at the time it was under treatment he had no constant current battery at hand, and he thinks it possible that he might have come to some result if that treatment had been used.—*Glasgow Med. Journ.*, May, 1872.

38. *Method of instantly arresting Epistaxis.*—Dr. MARIN, of Geneva, states (*Journ. de Méd. et de Chirurg. Practique*, May, 1872) that as the blood in epistaxis generally flows from only one nostril, and most frequently from the anterior third of one of the nasal fossæ, he was led to believe that by compressing the corresponding facial artery on the superior maxillary bone near the ala of the nose, the afflux of blood would be diminished, and the hemorrhage at once be arrested. He has tried this plan in very many serious hemorrhages from the nose, and the expedient has proved perfectly and promptly successful. —*L'Union Médicale*, 25th May, 1872.

39. *New Method of Treating Hydrocele.*—Mr. S. M. BRADLEY states (*Brit. Med. Journ.*, June 1, 1872), that as the serous tissue of the testicle is, from its physiological nature, liable to take on adhesive action, and that, from the character of the secretion poured out in a hydrocele being inflammatory and

not dropsical, it would even be prone to do so, he was led to the inference that simple tapping, followed by firm and equal strapping of the affected side, would probably be followed by an obliteration of the vaginal sac and a consequent radical cure. He tested the accuracy of this reasoning in the case of a medical man with a large simple hydrocele which had been tapped several times, and the last time injected with iodine without success. After explaining my object to him, I tapped the hydrocele, drawing off half a pint of fluid, and tightly strapped the affected testicle with soap-plaster. This was done at my own house, and the patient walked home, a distance of about a mile, immediately afterwards, and continued to go about during the process of recovery, which probably took place in about ten days; I say probably, as I kept up the pressure for three weeks without allowing the testicle at any time to remain unsupported. This case occurred eight months ago; since then I have followed the same course in three other instances, and in each with an equally satisfactory result. In no case was there any fresh effusion of fluid.

---

40. *New Method of Forced Dilatation for the Treatment of Fissure of the Anus.*—Dr. Alf. Liegard, of Caen, describes (*La Tribune Médicale*, April, 28, 1872), the following method of forced dilatation for the cure of fissures of the anus, which he has successfully employed in cases which proved rebellious to various other methods of treatment. The patient being chloroformed, he introduces into the rectum a small bivalve speculum uteri, which when closed is only three centimetres in diameter, but when completely opened becomes eight centimetres. This is easily introduced when closed, and being then opened it can only be withdrawn by the use of considerable force. The resistance being overcome, the parts are distended and a cure is at once effected.

---

41. *Strangulated Congenital Inguinal Hernia reduced by Aid of Aspiration.*—M. Demarquay exhibited to the French Academy of Medicine, May 21, a case of this in a young man, æt. 21. On May 5 a tumour appeared in the left groin, accompanied by severe pains and vomiting, which persisted next day. At the end of twenty-four hours he was taken to the Paris Maison de Santé, where the taxis was employed without success. Ice was applied during the next twelve hours, when M. Demarquay saw the patient. His features had undergone great change, and fever was set up. A congenital, elongated, voluminous inguinal hernia was found to exist, and M. Demarquay paid the more attention to other measures inasmuch as he had never succeeded in curing this description of hernia by operation. He applied carefully the taxis, while the patient was put into a deep sleep, with no effect, and he determined to try the effect of removing the intestinal liquids and gases by means of aspiration. A fine trocar was passed into the centre of the tumour, and, by means of Potain's aspirator, about 120 grammes of intestinal liquid were drawn into the recipient. The tumour subsided completely, and, the trocar having been removed, some minutes were allowed to elapse without touching the tumour, in order to observe whether new liquids or gases would enter the strangulated intestine. No renewal of the tumefaction took place, and very slight pressure upwards sufficed to procure the return of the intestine into the cavity of the abdomen. The patient was kept quiet, and on a low diet, fractional doses of opium being administered. No ill consequences followed. The case M. Demarquay regards as striking, and he proposes to apply this new mode of treatment—1. In all congenital hernias and in recent hernias which become strangulated at the time of their formation. 2. To old hernias which were quite reducible a few days prior to strangulation, and in large umbilical hernias that have been recently strangulated. 3. Aspiration, which has for its object facilitating the employment of taxis, should only be employed at an early period, when one can be well-nigh certain of returning into the abdomen the intestine in an unaltered state, and capable of resuming its functions.—*Med. Times and Gaz.*, June 1, 1872.

---

42. *Healing of Wounds and Ulcers by a New Method.*—Dr. James Braithwaite, of Leeds, states (*Brit. Med. Journ.*, June 1, 1872), that "the application of an aqueous solution of carbolic acid (one drachm to eight ounces of

water) to an ill-conditioned ulcer, cleans it from all purulent matter, and causes it to assume a healthy red appearance, with each granulation distinctly visible. If a wound in this state be freely exposed to warm dry air for some hours, it becomes glazed and dried on the surface. It becomes covered by what is practically an impervious transparent membrane, closely applied to the surface of the granulations, and exercising a certain amount of mechanical pressure upon them. In many cases, no matter forms underneath this membrane, and cicatrization goes on underneath it with great rapidity. In time, the membrane assumes the appearance of a thin dry scab, and drops off. If matter form under the membrane, it is at once visible through it; the lotion should then be reapplied, and the wound dried by exposure, as before. Immediately this is done, the inflamed edges of the ulcer commence to pale in colour, and in twenty-four to thirty-four hours have nearly the tint of natural skin.

"This treatment is especially of value in the cure of ulcers on the leg, as no confinement to bed is necessary; and what is required in the application of the lotion and subsequent drying can be done in the evening, after the conclusion of the day's work."

Dr. B. has tried this plan in numerous cases of small wounds, but does not think it applicable for sores of large size—say six or seven inches across—from a scald.

---

43. *Spinal Atrophy after Amputation.*—VULPIAN confirms by further researches his results in 1868 (*Archives de Physiologie*), and those of Dr. Dickinson subsequently published, demonstrating that, after the partial or total amputation of a limb, the part of the spinal cord furnishing nerves to the limb undergoes simple atrophy in the posterior cornu and column. These changes are more rapid and extensive, as might be expected, in young and growing subjects, than in fully developed adults.—*Brit. Med. Journ.*, May 18, 1872.

---

44. *Badly-united Fracture of Femur: Refracture-cure.*—Dr. J. FAYRER records (*Indian Medical Gazette*, March 1, 1872) two very interesting cases of this.

Case I. F. M., æt. 14, healthy English sailor-boy, admitted into Medical College Hospital, on 30th November, 1871, with badly-united fracture of the left femur, causing great distortion of the limb; the thigh being fixed at an obtuse outward angle, and much shortened.

It appears that he fell from a height of about eight feet on to the deck, when the ship was off the Cape of Good Hope, about six weeks ago; and apparently had sustained a double fracture, one in the middle of the shaft of the bone, and the other in the lower third. There was much thickening from callus, the union firm and the curvature of the thigh outwards excessive, with shortening of four inches of the limb. He was put under the influence of chloroform, and the bone forcibly straightened; during the pressure, necessarily exerted for this purpose, the bone was felt to give way, as if partially fractured and partially extended.

After the operation, the limb, being restored to its normal length, was placed in a long, straight splint. Rapid consolidation took place, without a single unfavourable symptom. He was able to walk with a stick in twelve days, and was discharged, cured, on the 21st December. The callus was rapidly being absorbed, and the strength of the limb daily increasing.

Case II. Coonj Beharry, a healthy Hindoo boy, aged 10, was admitted on 22d December, 1871, with a badly-united fracture of the right femur in its upper third, caused by falling from a height of a few feet, about a month ago; union had taken place, and the limb was much shortened and distorted at an obtuse outward angle.

He was placed under the influence of chloroform, and the limb forcibly straightened by pressure over the seat of union. The bone was heard to give way with an audible snap in the site of the former fracture: the limb was then extended and placed on the long thigh splint. Slight fever followed the operation, but it soon passed away; he had no unfavourable symptom, and union rapidly took place.

On the 4th of January he was able to stand and bear the weight on the leg. He now, 18th January, walks freely on it, and is about to be discharged. There is still thickening about the seat of union, but it is rapidly disappearing; the legs are equal in length.

45. *Bilateral Ankylosis of Lower Jaw: Operation.*—Dr. Maas, of Breslau, relates in the *Archiv für Klin. Chirurg.* (Band xiii. Heft 3) the case of a man aged 27, who was admitted into hospital with ankylosis of the jaw on both sides. It had come on after an attack of scarlet fever when he was seven years old, being preceded by severe pain in the part; and since the age of ten he had not been able to move the jaw at all. The secondary dentition was attended with great difficulty in the removal of the milk-teeth; and the new teeth were irregularly developed, and for the most part were displaced laterally. The patient, on admission, was of anæmic appearance, though in moderately good condition; the lower jaw was imperfectly developed. Speech was somewhat muffled, but was quite intelligible. Not the least movement of the jaw could be produced under anæsthesia. Herr Middeldorpf operated on the right side, removing a wedge-shaped piece of bone, as recommended by Esmarch, near the angle. The result of this was the formation of a false joint, with power of opening the mouth passively to the extent of about an inch. Between four and five months later, Dr. Fischer performed a similar operation on the left side; four months after this, the patient could voluntarily open his mouth, without pain, to the extent of about an inch and a quarter, and his general condition was much improved.—*Brit. Med. Journ.*, June 1, 1872.

46. *Acute Inflammation of the Lining Membrane of the Mastoid Cells; Suppuration; Perforation of the Mastoid Wall; Recovery.*—Mr. John Wilkins records (*The Practitioner*, March, 1872) two cases of this, which, as the author observes, "are interesting in many particulars; acute inflammation of the lining membrane of the mastoid cells not being a very common occurrence at any time of life, and less often seen in an adult subject where there never has existed a predisposition to ear affection; and when it does occur, the end is more often fatal than otherwise; and even in recovery, the parts have become so disorganized from destruction of bone, loss of hearing, etc., that the sufferers seldom get over for life the inconveniences arising from the attack. As a rule, it is said to be very difficult to diagnose between acute inflammation of the tympanum and that occurring in the mastoid cells; but if we possess a proper acquaintance with the anatomy of the parts, we shall see that the distinction is very marked. One great characteristic symptom of acute inflammation of the mastoid cells is the severe and continuous pain experienced at the base of the occipital region; next, we have the excruciating pain felt on slight pressure over the mastoid itself, and the tumefied condition of the integuments covering that process. There, internally, the pain is deeper-seated and comes on more in paroxysms, and there is considerable giddiness; in the worst cases drowsiness and coma. On examination of the meatus, its posterior wall, corresponding to the front wall of the mastoid cells, is peculiarly sensitive to the merest pressure; when these marked symptoms are present, and the patient gets no substantial relief from a free opening in the membrana tympani, and one through the integuments of the mastoid process to the bone, we may fairly conclude that disease exists in the cells of the latter; and, knowing that acute inflammation cannot exist long in any part without suppuration, and that pus will not remain boxed up, but will make a passage for its escape somewhere, it is only rational treatment and assisting nature to open the mastoid, immediately over the seat of the disease, to allow the escape of the matter. Though pus almost invariably has a tendency outwards, if you examine the specimen of bone I have brought here this evening, you will notice it is not unlikely that before the matter could make a passage for itself through the thick and stone-like hardness of the outer wall of the mastoid process, destruction of its inner thin plate would happen, and of course speedy death would be likely to follow. Death might also be brought about by the absorption into the system of this

fetid matter by the veins, or from sympathetic brain affection, producing abscess, etc.

The happy result of the two cases here most undeniably justified the means. I had never resorted to this operation before, and I see, on referring to Toynbee on Diseases of the Ear, that he had never performed the operation, though he had spoken favourably of the probable success which might follow it. In my two cases I feel satisfied that the operation saved the lives of both patients. To perforate the bone a strong scalpel is necessary; otherwise the knife is sure to break, as mine did in case No. 1. The inflammation has a softening effect upon the outer hard table of the process, and the bone cuts as if you were forcing an instrument through a thickish piece of India-rubber. Steady and firm pressure must be made with the instrument used, in case a sudden and unexpected jerk should force it through the thin and inner boundary wall in close proximity to the lateral sinus.

47. *Tracheotomy performed by the Galvano-caustic knife.*—M. VERNEUIL communicated to the Academy of Medicine, April 23, 1872, a case in which he had successfully operated by this method. Not more than forty or fifty drops of blood were lost. M. V. maintains that the galvano-cautery is less complicated than the écraseur; that it is very easily and conveniently managed; that the production and maintenance of the heat is readily accomplished; and finally that no process more effectually guards against the danger of hemorrhage.—*L'Movement Médicale,* April 28, 1872, and *L'Union Médicale,* April 25.

48. *New Process for Extracting Fragments of Urinary Calculi.*—M. RELIQUET communicated to the "Société Medico-Pratique de Paris," his process for extracting fragments of urinary calculi entangled in the eyes of the evacuating sound after lithotrity. It consists in injecting continuously and forcibly through the sound, a current of water while the sound is being withdrawn. This current of water fixes the fragments against the posterior border of the eyes, and then while the instrument is being withdrawn, it surrounds the prominent portions of the fragments, and at the same time distends the parietes of the urethra. By this means few fragments are left in the bladder after every operation of lithotrity, and the number of these operations required is lessened; and further, the chance of fragments being arrested in the urethra is diminished.—*L'Union Médicale,* May 23, 1872.

49. *Injection of Solution of Ergotine for Varicose Veins of the Lower Extremity.*—Dr. PAUL VOGT, Assistant Surgeon in the Out-Patient Clinic at Griefswald, encouraged by the benefit which Langenbeck and others have derived from treating small aneurisms by hypodermic injection of the solution of ergotine, determined upon trying it in varicose veins of the lower extremity. Hitherto, as the various attempts at obtaining a radical cure of this affection by producing obliteration of the veins over a certain extent has led to evils and dangers out of proportion to the affection itself, he has confined himself to palliative treatment. He refers (*Berlin, Kl. Woch.,* March 4) to a case in which an extensive varix which had occupied the leg for years yielded in the course of a week to two ergot injections (ext. sec. cornut. two parts, to sp. vini and glycerine of each seven parts), this being replaced by a hard, circumscribed infiltration, which eventually subsided. In various other cases as remarkable results have followed.

In explanation of the action of the ergot, Dr. Vogt believes that the following points are worthy of consideration: 1. From clinical and experimental observation the ergot injection produces contraction of the muscular coats of the vessels—chiefly of the arteries. Through the contraction of the calibre of the arteries thus produced (especially operative on those of medium calibre which are rich in smooth muscular fibre), less blood is carried into the veins, this lesser quantity being propelled with greater velocity. 2. The ergot also acts upon the muscular coat of the veins; for although this after years of persistent dilatation may have disappeared in many places, yet in others it is always still present. When, indeed, the varices have not been of prolonged duration, that a considerable elasticity of the walls of the veins persists is shown in puerperal women, who often prior to delivery have varicose veins as thick as the finger, which only a few days after that event entirely subside. 3. It is possible that some effect may be exerted by the direct compression produced on the varix by the infiltration-swelling which results.

Whether the favourable results which in all these cases have been so striking will prove definitive cannot be decided, as sufficient time has not elapsed to allow of the cure being regarded as radical. At all events, so simple and harmless a method is well worthy of further trials; and Dr. Vogt has derived good results from its employment in other forms of phlebectasis, in varicocele, hæmorrhoids, and certain forms of angioma.—*Med. Times and Gaz.* May 11th, 1872.

---

50. *M. Alphonse Guérin's Cotton-wadding Dressing for Wounds.*—This method, which was described in our No. for October, 1871, p. 561, seems to have met with much favour in France. M. Flaux, in an interesting article in the *Gazette des Hôpitaux*, Nos. 22 and 25, (*Med. Times and Gazette*, April 6, 1872) calls attention to its eminent applicability in military surgery. The experience at the St. Louis during the War of the Commune, carried on under very unfavourable circumstances, exhibited its great superiority in a remarkable manner. Success attended this treatment of the most complicated as well as the most simple wounds, prevention of purulent infection by the filtering action of the wadding being a chief cause of this. The simplicity, facility, and rapidity of this mode of dressing constitute its chief feature, several sheets of wadding and five or six strong rollers being all the apparatus required. The dressing is always applied or renewed elsewhere than in the impure air of the wards. After having washed the stump or wound with tepid water, to which carbolic acid or camphorated spirit has been added, M. Guérin cuts all the ligatures save the principal one close, and fills up the depths with small masses of cotton level with the surrounding parts. Wadding is then applied in sheets or rollers until the part is surrounded by a thick and voluminous cylindrical cuirass, which extends far beyond the limits of the wound. The limb and applied wadding being held by the assistants, the surgeon next applies a strong resisting bandage, twelve metres in length, in such a manner that after securing the proper adjustment of the wadding by its aid, he employs all the force he is master of in producing compression. However energetic or laborious this may be (never executing it with violence or jerks, however), the elasticity of the wadding renders it painless to the patient, and its being so is the test that a sufficiency of wadding has been applied. M. Guérin regards this "elastic compression" as one of the best elements in the treatment, preventing, as it does, abscess, purulent sinuses, induration, œdema, and other accidents. Under this compression, and in spite of the mass of wadding and bandage which surrounds it, the skin in the vicinity of the wound retains all its elasticity, supleness, and physiological properties. The dressing once applied, whatever may be the seat, extent, or gravity of the wound, *all pain is immediately suppressed;* and thus, protected by so substantial a covering, the patient can be carried or walk back to the ward without any inconvenience.

Another peculiarity of this mode of dressing is the rarity of its renewal, this only taking place at periods varying from twenty-five to forty days. At the end of two or three days there is usually some loosening of the bandage, which has to be remedied by the application of a new one, this usually rendering the whole solid enough until the time arrives for its removal. When any of the secretion oozes through the bandage, or air gains admission at its upper part, additional layers of wadding and a new bandage have to be applied. This is a rare occurrence, and is usually due to insufficient wadding having been employed, the bandage not being tight enough, or the meddling of the patient. The dressing is never removed before the twentieth day, and M. Guérin has always regretted when he has yielded to the impatience of the patient, only to find the wound proceeding rapidly towards a cicatrization that ought not to have been interrupted. No fetid odour attends the non-renewal of the dressing, and the slight smell of "old linen" which is sometimes present yields to the application of camphor or carbolic acid water. The removal of the dressing is performed out of the ward, and is speedily accomplished until arriving near the wound itself. Here gentleness is required, owing to a more or less firm adhesion that has become established between the cotton and the skin. Abundant washing in tepid water, to which camphorated spirit has been added, may then be required, or even immersion of the part. When the wound is exposed it is found to be granulating, the process of healing having been more rapid than under ordinary dressing. The amount of almost inodorous pus is usually small, even in extensive wounds, while in those of little extent it is usually absent. There are usually no traces to be found of the ligatures.

"Such," says M. Flaux, "is the dressing of M. A. Guérin. Of simple and rapid application, clean, solid, suppressing pain, and convenient for the patient —whose movements are by it rendered easy and without inconvenience—light, inodorous, and cheap, it requires after its application only intelligent surveillance unattended with fatigue. Then there is its seldomness, thus saving at the same time fatigue and suffering to the patient as well as to the surgeon, who, as in the late events, may often be overworked and at last exhausted by his labours. Finally, it is a shelter from purulent infection and the perils resulting from the overcrowding and vitiated air of a hospital. What other mode of dressing will allow of our no longer fearing this overcrowding so sadly inevitable in hospitals as they are now constructed? What other dressing would allow of our transporting to a distance with more facility and less anxiety and danger patients suffering from dangerous wounds?" He goes on to show how such advantages, great as they are in civil practice, are of tenfold importance in military surgery.

## OPHTHALMOLOGY.

51. *Anœmia of the Optic Nerves treated by Galvanism.*—Mr. R. J. PYE-SMITH reports (*Brit. Med. Journ.*, May 18th, 1872) several cases of anæmia of the optic nerves (white optic disc) in males treated in Guy's Hospital, at the suggestion of Mr. Bader, to test the therapeutic value of galvanism in this affection.

"A battery of Daniell's elements was used, the electrodes terminating in small sponges soaked in warm water. The negative electrode being placed on the skin behind the ear, the positive electrode was applied to the closed eyelids of the same side, or to the brow. On closing the circuit with ten elements, the healthy eye perceived a round central illumination, generally described as about the size of a sixpence, or of the tip of the finger, irregularly circular, and of a blue tint. The impression lasted about five seconds, and then gradually faded away. On interrupting the circuit, a momentary flash was perceived over the entire field.[1] These effects were produced when the eyes were open, though more marked when they were shut. The modifications observed in the patients with white optic discs will be mentioned in the account of each case. The number of elements employed was determined by the flashes perceived, the smallest number being used that produced in each case any illumination, and where no flashes were perceived an unbearable amount of burning at the electrodes, or the occurrence of giddiness, served to limit the number.

---

[1] In my own case, the defined illumination was placed somewhat to the temporal side of the field, and was accompanied by a less distinct and somewhat larger illumination in the centre of the field. These may perhaps represent the optic disc (well defined and to the temporal side) and the region of the yellow spot (central). That they are not due to the form of the electrodes, is shown by the fact that small V-shaped electrodes produced the same circular illumination. It may be mentioned that this illumination was not perceived by patients whose eyes had been excised; though one of three such patients experimented upon did perceive the flash over the entire field on interrupting the circuit, and all three of them perceived distinctly the flash over the entire field produced in healthy eyes on interrupting the circuit when passed in the opposite direction (*i. e.*, the negative electrode being on the eyelids). In one of these cases the eye had been completely excised seven years before.

"Ophthalmoscopic examination during the passage of the current showed in all cases the veins of the retina to be congested after the first second (during which they sometimes appeared to be partially emptied), and to remain so till the interruption of the circuit, when they gradually resumed their natural fulness. This effect was observed even when no flash was perceived by the patient.

"The patients were galvanized every Tuesday, Thursday, and Saturday. The current was usually passed six times at each sitting, for eight or ten seconds each time, with intermissions of an equal period."

The following table exhibits an analysis of the cases:—

| Case. | Duration of amblyopia. | Eye galvanized. | No. of elements employed. | Description of flashes perceived. | No of days galvanized. | Result. | Remarks. |
|---|---|---|---|---|---|---|---|
| 1. | 2 to 5 yrs. | Both. | 20 | Momentary flashes on closing and on interrupting. | 23 | Considerable improvement. | |
| 2. | 2 to 3 yrs. | Both | 15 | Momentary flash on interrupting. | 18 | Doubtful improvement. | |
| 3. | 2 to 3 yrs. (still slight.) | Left. | 10 | Normal illumination and flash. | 11 | Sight impaired. | Case Complicated by results of syphilitic inflammation and (?) of Bright's disease. |
| 4. | ¼ to 2½ yrs. (still slight in right eye). | Both. | 15 | Right normal illumination. Left none. | 20 | Doubtful improvement. | |
| 5. | 2 to 3 yrs. | Both. | 15 | None. | 5 | None. | Treatment not continued long enough to obtain any result. |
| 6. | ½ to 1½ yrs. | Both. | 15 | Momentary flashes on interrupting, and sometimes on closing. | 17 | Slight, but decided improvement. | Case complicated by results of syphilitic inflammation. |

It is stated in a postscript that subsequently no further marked improvement was observed. To try the effect of reversing the current, Mr. Pye-Smith applied the galvanism for six weeks longer in the same way to the right eye of each patient, and in the reversed direction to the left eye. The flashes thus occasioned varied as previously stated, but no further effect seemed to be produced.

Mr. Kiddes, who tried the same treatment in the female patients, reports that the result, on the whole, was entirely unsatisfactory. "Five patients were selected, whose ages varied from 21 to 36 years. At times there appeared to be some improvement of sight, but this was soon followed by a relapse; and I attribute it more to the general health of the patient than to any benefit derived from galvanism. I have also treated six males in a similar manner (aged between 43 and 50), in addition to those reported by Mr. Pye-Smith, and no improvement of sight has been obtained in any case."

—

52. *Strychnine-Injection in Traumatic Amaurosis.*—In the case of an artilleryman who had been rendered amaurotic in the left eye by a blow from a splinter of shell, Dr. Werner, of Sangerhausen (*Berlin, Klin. Wochenschr.*, May 6th) injected subcutaneously 2 *milligrammes* (.03 grain) of nitrate of strychnia. The result was to give the patient slight perception of light, which had been totally absent. Convulsive twitchings, however, set in half a minute after the injection, and lasted five minutes; and the patient had frontal headache for a day afterwards. Two days after the first injection, four-fifths of a *milligramme* (.012 grain) was injected; the patient was enabled to perceive

large objects at a distance of two inches; and, on the dose being repeated two days later, he was able in half an hour to see distant objects. The last two injections were followed by slight twitchings, but no headache. The pupil, which had been in a dilated state, regained its contractility to some extent; but, when he was dismissed at the end of three weeks, there was still slight mydriasis. Ophthalmoscopic examination before the injection had shown that there was no structural injury of the interior of the eye. A similar case was recorded by Dr. Nägel, of Tübingen, in the *Klinische Wochenschr.* for 1871 (No. 9.)

## MIDWIFERY AND GYNÆCOLOGY.

53. *Formidable Pulmonary Symptoms Caused by Pregnancy in Cases of Disease of the Heart.*—M. MICHEL PETER, in an interesting article (*L'Union Médicale*, Feb. 27, and March 5, 1872) points out the imminent peril which women affected with heart disease incur when they become pregnant.

Pregnancy necessarily augments the mass of blood to be circulated and consequently increases the labour of the heart, and this is most injurious to a diseased heart. A not less certain effect of pregnancy, consecutive to the first, is the production of hypertrophy of the heart, which precipitates the occurrence of the phenomena of the second stage of affections of the heart (disturbance of hematosis) and hastens the occurrence of the third stage (derangement of hematopoiesis). The practical lesson taught by this is, that pulmonary affections may be expected in women labouring under heart disease, who unfortunately become pregnant, and that precautionary measures should be adopted and active treatment resorted to in case of the occurrence of pulmonary disease.

Another practical lesson is that women with heart disease should be cautioned against becoming pregnant. A third lesson is that, after delivery, the nursing by the mother of her infant should be discountenanced, for the diseased heart, already overworked by pregnancy, ought not to have the further labour imposed upon it of maintaining the adventitious circulation of the lacteal secretion.

Further, should rapidly threatening pulmonary disease occur during pregnancy advanced to the fifth month, by ausculting the heart it is probable that a latent lesion, previously unsuspected, of this organ, will be detected, and which is the formidable cause of the pulmonary affection.

54. *Recurrent Discharge of Fluid from the Uterus during Pregnancy.*—Dr. D. DYCE BROWN records (*Brit. Med. Journ.*, May 25, 1872) an interesting case of this in a lady, pregnant about four months, who after rather more exertion in walking than usual, was wakened in the middle of the night from a sound sleep by feeling a gush of fluid from the vagina, which, on inspection, seemed the liquor amnii just tinged with blood. After this gush, there was nothing more in the way of discharge that night, and only a slight feeling of uneasiness in the uterine region. Dr. B. kept her in bed by way of precaution, but nothing further occurred till that day week, when the same discharge returned, and in the same manner. After another week, it again returned, as before, and with the same reddish tinge. Before each discharge there was a feeling of fulness and distension in the uterine region, followed by a feeling of uneasiness, which soon disappeared. The movements of the fœtus were now distinctly felt; the os uteri was slightly open. After this time, the discharge came on every two, three, or four days, and increasing in quantity. When she was about five months advanced, along with the usual discharge of clear fluid, there came an alarming quantity of blood in the middle of the night. The blood likewise came in a gush; so that after what might be supposed to have lodged in the vagina had come away, there was no further hemorrhage. Nothing else was felt by the patient than the usual temporary uneasiness. For the next month the watery discharge came nearly every night, in such quantity as frequently to soak a couple of towels. At the time of hemorrhage, there was no alteration in the os, and no evidence of partial attachment of the placenta on the os. Exactly one month after the former hemorrhage, her pulse became quick and face flushed,

and Dr. B. predicted either a return of hemorrhage or a miscarriage, but soon afterwards labour came on and she was delivered of a six months' fœtus. The amniotic sac was felt, as usual, full and tense, requiring rupture, after which a large quantity of amniotic fluid escaped. During all this time Dr. B. kept his patient in bed. The fluid in this case could not have been amniotic, as, from its continuance and profuseness, labour must have come on sooner, while the presence of the sac entire at labour requiring to be ruptured proved it.

At the next pregnancy, at about the corresponding period of advance in gestation, the same fluid again came away in the middle of the night in a gush. Having found on the former occasion that no effect in warding off the miscarriage was produced by keeping the patient in bed, Dr. B. allowed her to rise, but requested her to keep the sofa for a week. At the end of this period, the discharge occurred as before. She then rose and went about as usual, but there was no further return of the discharge, and she went safely to term. She is at present pregnant a third time, and a third time has the discharge come on at the same period of pregnancy as at first. This time, the patient would not even keep the sofa for a day, and there has been no return of the discharge. This is more than four months ago. There had been no exertion or fatigue to account for the last discharge.

55. *New Use of Barnes' Dilators.*—Mr. H. M. Morgan records (*Brit. Med. Journ.*, May 18th) two cases in which he resorted to Barnes' Dilators with advantage.

The first was a case in which the waters broke early, and the os small and unyielding. Mr. M. thought that by making an artificial bag of waters he would materially assist labour, so with some difficulty he managed to introduce Barnes' largest bag within the os by the help of an uterine sound. When once it was there, it was easy to pump in nearly a pint of warm water; and the labour then progressed very well, each pain dilating the os by means of the artificial bag quite in a natural way. He thinks that by this means he gained some hours.

The second case was one of miscarriage at the eighth month with profuse hemorrhage, placenta prævia, and unyielding os. Mr. M. ruptured the membranes with a stiletto; and then, by means of a long pair of ovum-forceps, he passed Barnes' largest bag (rolled up small) quite into the womb; and afterwards pumped into the bag nearly a pint of warm water. As she had no pain worth mentioning, he had given her forty minims of liquid extract of ergot before puncturing the membranes. As soon as he had filled the bag with water, he commenced dilating the os himself by drawing at the tube of the bag till his finger and thumb could reach the root of the tube in the vagina. The result was, that in little more than five minutes, he pulled a soft bag, as large as an ordinary new-born child's head, through the os; and then the vagina and perineum were gradually dilated in the same way until the bag came quite away. He found the head presenting, and pains were coming on moderately; but, as there was no time to be lost, he preferred not to wait for nature to act; so, with one hand internally, and the other externally, he turned the child and brought a foot down, and soon completed the labour with the aid of the patient's own pains and efforts. The placenta was expelled naturally, and the womb contracted well after it. Dilatation, he says, would not possibly have been accomplished so quickly, so easily, so painlessly, and so safely, by the hand. Moreover, this bag, by being pressed against the bleeding placental vessels in its passage through the os, compressed them and checked the hemorrhage, in the same way as the head does in those cases where the pains are strong enough to keep it well pressed against the os.

56. *Utero-Peritoneal Fistula.*—A remarkable case of this is recorded (*Lancet*, May 18, 1872) by Mr. Lawson Tait. The subject of it was aged 24, was married at eighteen and had five children, the last six weeks before seen by Mr. T. (March 4th). She said her last labour was prolonged; she lost a great deal of blood and the hemorrhage has never since ceased. She was anæmic and had a worn-out appearance. On the 8th of March Mr. T. introduced a sound into the uterine cavity three inches; "but after reaching this distance the sound

slipped, without the exercise of any force, through the fundus, apparently about midway between the cornua and somewhat on the anterior aspect, and could readily be felt under the abdominal parietes. The woman is so thin that the position of the exit of the sound can readily be felt. On this day I passed the sound twice, and each time found that it only required a little manœuvring to pass it at the one spot." Mr. T. passed the sound subsequently in the presence of several physicians and satisfied all as to the fact. This fistula Mr. T. believes had its origin in a rupture of the uterus during labour, remaining undiscovered until the walls of the uterus became thinned by the process of involution.

"Cases of perforation of the fundus by the sound," Mr. T. says, "are, I am convinced, by no means so rare as one would be inclined to believe, for I have seen at least five or six, and Sir James Simpson used to speak to us of having seen many. They are very curious, and give rise to many interesting subjects for consideration. For instance, is it likely that the subject of this fistula will ever again become pregnant? I see no reason why she should not, and I believe the fistula will remain patent until she does."

---

57. *Inter-menstrual or Intermediate Dysmenorrhœa.*—Dr. W. O. PRIESTLEY, in a paper read before the Royal Med. Chir. Society (Nov. 28th), pointed out that, although much had been written concerning dysmenorrhœa, and several forms of it had been described in accordance with the pathological views taken of its causes, the description of the several varieties was ordinarily limited to the time of the catamenial period, with the two or three days additional which may precede and follow the menstrual flow. From time to time, however, cases of a more obscure kind presented themselves, in which the chief suffering is remote from the actual menstrual period, but comes on, nevertheless, with the same punctuality, and is probably dependent on organic changes associated with the production of the catamenia. Probably other practitioners had observed like instances, as they were not unfrequent, but as the author had met with no description of them, he brought the subject before the Society as a fragmentary contribution to the pathology of uterine affections, which might possibly evoke further elucidation by discussion.

In all the cases detailed severe pain was experienced by the patients midway in the menstrual interval. The pain commonly came on about fourteen days after a catamenial period, and, after lasting a variable number of days, ceased before the supervention of the next expected period. In one case, the pain, beginning midway in the interval, ran into the following monthly period, and was relieved by its flow. The suffering was constantly referred to one or other ovarian region, and in three cases out of four marked tumour, or thickening from old adhesions, was found in that locality.

The reason for the occurrence of pain in the inter-menstrual period, and with such regularity, was not, in the present condition of our knowledge, perfectly obvious. A study of the physiological and pathological conditions left little doubt, however, that it was due to perturbations in the function of "spontaneous ovulation" habitually going on in the ovary. Hypertrophy of the structure of the ovary, or thickening of its indusium, would lead to undue vascular excitement, and impede the advance of ova to the surface in their attempts to attain maturity. It was not unreasonable to suppose, from all the known facts of the case, that preparation for an approaching period began in the ovary ten or fourteen days before the occurrence of the monthly uterine discharge, and if the initial steps in the process of ovulation were opposed by certain pathological conditions, pain would ensue. Nay, in the absence of distinct organic change, it might readily be imagined how special irritability in the ovary would cause an unusual amount of disturbance whenever there was occasion for the exercise of fresh activity in the organ. This latter class of cases would partake more or less of a neuralgic character.

The treatment would depend on the pathological condition as ascertained by examination. The pain being only a symptom, it would be needful to inquire into the cause; and if there were tumour, or thickening depending on former inflammation, absorbent remedies would be indicated. If no organic change of structure could be detected, anti-neuralgic remedies, such as quinia, iron, and arsenic, would best answer the purpose of cure.—*Lancet*, Dec. 9, 1871.

# CORRESPONDENCE.

*Contributions to the Pathology of the Blood.* By PROF. VON S. STRICKER. Translated from the German by F. J. BUMSTEAD, M.D.

[IN the American Journal of the Medical Sciences for January, 1868, Prof. J. H. Salisbury, of Cleveland, Ohio, published a "Description of two new algoid vegetations, one of which appears to be the specific cause of syphilis, and the other of gonorrhœa."

The subject attracted but little attention until on the 26th of January, 1872, when Dr. Adolph Lostorfer (see *Archiv. für Dermatologie und Syphilis*, IV. Jahrgang, erstes Heft, 1872), read a paper before the Wiener Gesellschaft der Aerzte, a paper, "*Ueber die specifische Unterscheidbarkeit des Blutes Syphilitischer*," which, for the moment, excited on the part of many of the members a furore of applause, but which met with much subsequent opposition and gave rise to discussion of a violent and personal character.

Prof. Stricker, whose pupil Dr. Lostorfer was, then undertook a series of investigations upon the subject, at which he kindly invited me to be present. The results are given in the following pages, which I have translated from advance sheets of the *Medicinische Jahrbücher*, furnished for this purpose by Prof. Stricker. It is not inappropriate that they should find a place in the Journal which first published Prof. Salisbury's paper, although no one, I presume, after reading the two papers, will be inclined to believe that Prof. Salisbury's "crypta" and Dr. Lostorfer's "corpuscles" are one and the same thing, and Prof. Stricker does not regard them as identical.

But however this may be, it is fortunate that the fungous origin of syphilis has been so thoroughly investigated by such a keen and able observer as Prof. Stricker, and so far as the physical elements of syphilitic blood are concerned, it is safe to say that they are here described as fully and as perfectly as the best microscopes of the present day will enable us to appreciate them. F. J. B., Vienna, May 12, 1872.]

I undertook the following investigation to decide two questions; I desired in the first place to ascertain the nature of the corpuscles discovered by Lostorfer, and in the second to know, from my own examination, whether these corpuscles, as Lostorfer had asserted, were peculiar to the blood of syphilitic persons.

I commenced my investigations with the blood of three syphilitic men, and in all three the corpuscles in question were found in abundance in the course of a few days; I therefore supposed that I had obtained abundant material for the solution of the first question.

A preliminary inquiry was, whether Lostorfer's corpuscles are not present in fresh blood. Before answering this, I will describe the mode in which I prepared and kept my preparations.

In preparing specimens of blood merely for examination in a fresh state with the highest powers of the microscope, I endeavour to make them as thin as possible. The slide and cover glass should first be carefully cleansed and dried. A small puncture is made in the integument of the person whose blood is to be examined, from which the blood will ooze forth. The covering glass is now held by its parallel edges between the thumb and forefinger, and its central portion is brought in contact with the apex of the drop of blood emerging from the wound, so that a minute portion adheres to the surface of the glass. If the covering glass is now quickly applied to the slide, the minute drop of blood will, in most cases, spread itself out sufficiently; otherwise, a gentle pressure upon the covering glass is required. Since the examination is to be carried on with immersion lenses, and since it is of importance to be able to examine the specimen near to its edges, while, on the other hand, any overflow of water beyond the sides of the covering glass spoils the specimen, it may not be superfluous to remark that I apply the water, required by the immersion lens, only in very small quantity and to the upper surface of the covering glass by means of a pipette, drawn out at both ends to a very fine point.

The appearances to be seen in fresh blood are manifold. In the blood of many persons, to be sure, only the well-known elements are found, to wit: red blood corpuscles, colourless blood cells and smaller, colourless nucleoli. Very frequently, however, there appear in larger or smaller numbers colourless bodies from the size of a nucleolus to that of a colourless blood corpuscle. These are especially visible when working with very high powers.

It would be fruitless to describe the varied forms of these bodies. I will only say that many of them appear as if they were fragments of young cells, whilst others give the impression of being knotted points of coagulation. The latter are chiefly found in places where the preparation is somewhat thick, and where the interspaces between the blood corpuscles are traversed by numerous fine threads.

It is not improbable, therefore, that the branched, knotted points, as well as the fine threads, consist of fibrine. Those bodies which look like portions of colourless blood corpuscles are, like the last mentioned, various in form and seldom spherical.

Wherever a rich net of fibrine is present, numerous and exceedingly fine particles are to be found, but it is easy to convince one's self that they are for the most part sections of fibres running parallel or obliquely to the axis of the microscope.

Besides the above mentioned constituents, very minute particles are seen in the blood of many persons, which can scarcely be defined by an immersion lens No. 10, and which are frequently in active oscillation. Whether these oscillations are exclusively Brownian, or whether the particles are sometimes organisms showing vital movement, I will not attempt to decide. The question, however, appears to me worth raising, in order to call attention to the fact, that the existence of very small organisms of a low order in the circulating blood of healthy persons is not excluded.

With regard to the presence of such foreign bodies as accidentally get mixed with the preparation, any one conversant with the microscopical examination of the blood, can decide.

In rare instances, however, corpuscles are found in fresh blood, with regard to which it is difficult to say whether they are an accidental admixture, or if they were previously present in the circulating fluid. They are, for the most part, spherical, with a dark outline, and they are distinguished by the fact that when seen under a very high power (objective 15 of Hartnack) and with sharp adjustment, they are very dark.

For the purpose of breeding the corpuscles which we now have in view, we have to preserve a good specimen of blood under exposure to the air, for as long a time as possible. This object will be attained if the preparation be kept in a chamber in which it is on the one hand protected from drying, and on the other hand from moisture. That the drying of the preparation is not advantageous, is self-evident. The same is almost equally true of any thinning of the blood through the addition of moisture. The corpuscles of the blood are very susceptible to any thinning of the plasma in which they float. The red corpuscles become pale; the plasma takes up colouring matter and becomes turbid. I will hereafter show that the gradual addition of water is highly prejudicial for the purpose we have in view. I can only state in general terms how these two conditions, viz., preventing the specimen from drying, and also keeping out water, are to be attained. Every experimenter must determine the finer shades for himself. Place then the specimens in a chamber in which the surface of water therein contained shall be small in proportion to the size of the chamber. For an exsiccator glass, such as chemists use for drying objects, a moist sponge the size of a walnut is sufficient to protect the specimens from drying. Beneath this glass I place a framework that will hold about a dozen specimens. If the slides are labelled, specimens from various sources may be placed in the same chamber and upon the same frame.

In order to favour the development of the corpuscles, I prepare the specimens somewhat thicker than above described. Before collecting the blood, I warm the slide and smear upon it two thin strips of wax in such a manner that the covering glass can rest upon them. After the specimen is prepared I press the covering glass down upon the wax until the rolls of adherent blood corpuscles are spread out in the form of a net. The meshes (plasma-islands, or interspaces) of this net, filled with plasma, afford breeding spaces which are admirably adapted for our purpose.

It is desirable, for reasons to be given hereafter, to make the specimen, relatively to the covering glass, so small that its edges may be examined with an immersion lens.

When the specimen is thus put up, it is also easy to test microchemically the granules which are found in the plasma-islands. The preparation of blood is, in fact, transformed into a comparatively firm cake by means of the threads of fibrine which run through it; the granules themselves are often seated in a network of fibrine; one or more of these can be maintained in the field of vision, whilst the reagent is allowed to flow in in exceedingly small quantities from the edge of the covering glass. The significance of this mode of preparation will be understood, when it is recollected that in fresh and even in older preparations of blood when thin, any addition of fluid sets the constituents in motion, which is very soon perceptible under high magnifying powers. Under these circumstances, if you wish to know how a certain granule is changed by the reagent, you must endeavour to follow it by means of corresponding motion of the slide; but since the granule is not alone set in motion but the red corpuscles also swim with it, the former is soon covered over by the latter, and the eye and the hand must be taxed to the utmost to follow the object in its course. Even then the same degree of certainty can never be attained as when the body remains quiescent, while the reagent is allowed to slowly act upon it. Especially when there are a number of corpuscles in a plasma-island near the edge of the preparation, and the reagent is allowed to flow in from the same side, the reaction can be perceived as soon as the fluid reaches the blood.

In case I wish to examine for several hours consecutively any one portion of a specimen of any one granule in particular, I build up a wall around the slide upon the microscope. Said wall consists of four pieces of folded, moistened and bibulous paper, which are kept wet from time to time by means of a drop-bottle. In this way there is no trouble in keeping one preparation under the microscope for eight or ten hours.

I have obtained some interesting results by being able to keep my preparations for several hours in succession upon a heated slide. For this purpose I used the heatable object-table, invented by me and described in my *Handbuch der Gewebelehre.* To this table I attached a copper wire about twenty-five ctm. long, and, placing a small spirit lamp under the extreme end of it, gradually brought the latter nearer and nearer to the microscope, until the desired temperature was attained. I then enveloped each end of the slide with moistened blotting paper, so that while the middle of the slide rested upon the metal. the ends of the same found steady support upon the hard rubber by means of the paper. Two more folded strips of moistened paper were then placed uprightly on the two remaining sides of the slide, one before and the other behind the objective lens of the microscope. Twice I moistened these strips of paper from time to time; my specimen was protected from drying in spite of the artificial heat. Finally I placed a large screen before the microscope, which concealed the flame of the spirit lamp from the eye of the observer. In spite, therefore, of the loss of light occasioned by the use of the heating apparatus, I was able to work with lenses of high power.

When the number of specimens to be examined prevents us from watching any one of them continuously, as we might wish to do, it is well to have some fine shreds of silk floss, to serve as landmarks, running through the preparations. These are best taken directly from a cocoon and are to be applied to the slide before it is charged with the blood, by laying them across the field and sinking them into the two strips of wax before mentioned. By this means it is very easy to find again any given point, even when using the highest powers, especially if assisted by a sketch upon paper of the bearings made at the first examination.

By the method which I have now described I have in a large number of specimens been able to watch, for several days in succession, the elements which are to be seen in fresh blood, and I am now able to state that those bodies which I have mentioned as due probably to coagulation, or which may be torn fragments of protoplasm, disappear, as a rule, in the course of twenty-four hours. It is, therefore, for our present purpose, immaterial whether my suspicion as to their nature is correct or not; for the only question at present is whether these bodies are identical with those discovered by Lostorfer, or whether the latter are produced from the former; in either case Lostorfer's bodies would be found, especially in the fresh blood, both of sound as well as diseased persons. Such, however, is not the fact. I have, in a series of fresh specimens of blood carefully drawn and registered all that was to be seen in the plasma-islands, and watched the bodies just referred to until their contours had become indistinct and pale, when around them new bodies, not visible before, would spring up, and, on repeated examination, be seen to grow larger and larger, until they finally assumed the unquestionable characters of Lostorfer's corpuscles. In what way the bodies visible in the fresh blood disappeared I cannot explain, but such explanation does not pertain to the question in hand.

The inquiry which I raised at the outset whether Lostorfer's corpuscles are to be found in fresh blood, is now partly answered, but I can relate an observation which disposes of the question still more decisively.

In Prof. Zeissl's syphilitic wards, in the month of March of this year, was a man whose blood was unusually favorable for my investigation. The patient was twenty-two years old, somewhat poorly nourished, and had suffered with syphilis for four months. I took several drops of blood from his vola manus, prepared a number of specimens, and after twenty-four hours found the edges of the latter strewn with the looked-for corpuscles. A second set of specimens showed the same result. On trying a third set, no corpuscles were to be seen the first thirty-six hours, and were only visible at the end of forty-eight hours.

At this time I had just stopped having my room warmed, although the weather was still somewhat cool. On considering the different circumstances which might have occasioned the delay, I was led to take the temperature of the room into account. On the following day I had my room heated up to 22° Centigrade, obtained new specimens, studied them carefully, and noted down all that was to be seen in several portions near the periphery. In the course of three hours the corpuscles had made their appearance in large numbers. Several of them were so large that I was forced to one of the following conclusions: Either, in spite of all my previous observations, I had deceived myself, the corpuscles had been present in fresh blood and had escaped my detection, or their growth in this case had been very rapid, and it must be in my power to bring it under direct observation. On the following day I took again a fresh specimen, had my chamber warmed as the day before, placed a portion of the specimen near the periphery, under Hartnack's immersion lens No. 10, and watched. About fifteen minutes had passed since the drop of blood was taken, when it seemed to me that I could detect, in the otherwise clear plasma-interspace, a few granules. In the course of ten minutes more these granules had assumed so decided a character that I could clearly define their positions. At the same time it appeared to me as if numerous fresh granules were making their appearance in the same interspace. I could not look continuously, since, to spare my eyes, I had to look up from time to time, but I was able to fix the position of certain granules so distinctly that I recognized them at once at each fresh glance. At the end of half an hour the granules which had first appeared were already so large as to enable me to recognize them as the bodies I was looking for. At the end of an hour and a half the first granules had grown to the size of a nucleus of a pus corpuscle, and the whole plasma-interspace was scattered over with similar but smaller granules. There was no longer the slightest doubt; I had before me Lostorfer's bodies; they had made their appearance and grown up in a clear plasma-interspace under my own eyes.

On the following day I repeated the experiment, but, instead of heating my room, I laid the specimen upon my heatable table, warmed up to 25° Centigrade, and repeated exactly the observations made on the previous day. The conclusions drawn from numerous earliar examinations, continued over several days, were now supported by direct observation, and my question was answered with certainty.

Let us now turn to the first and chief question. What is the nature of these bodies? They are either organisms or they are inorganic. From what we have thus far learnt we cannot decide with certainty in favor of either of these possibilities. We know that they grow, but growth alone is not sufficient.

Lostorfer has stated that the bodies bear sprouts. This statement is also true; but I have ascertained by exact observation that some of the sprouts arise not through a process of growth, but through the apposition of other bodies.

When quite fresh most of the corpuscles are spherical and under No. 10, and even No. 15, immersion lens, are seen to be homogeneous. Now it was my good fortune to observe how a small corpuscle, which had been lying for some time in the neighbourhood of a larger one, approached the latter and became attached to it like a button. After a time the contour changed in such a manner that the sharp constriction between the two bulged out and became concave on either side; then the concavities became effaced; the general outline was club-shaped; then the summit was gradually drawn in and the club was changed into a circle. I could, of course, not say that all the bodies provided with sprouts had arisen in this way, but it was enough to have once distinctly witnessed such a mode of origin. It was enough to have shown that the appearance of sprouts already formed proved nothing as to their mode of life.

Lostorfer has also stated that the corpuscles sometimes grow into sack-shaped bodies or tubes. I only once saw a corpuscle with a long, adherent tube, but in this instance I distinctly observed its mode of origin, which was due to the arrangement in a row of three small corpuscles that at the commencement of the observation lay near each other by the side of a large one.

The interspaces or constrictions became effaced, and a homogeneous tube projecting from the large corpuscle was completed. Hence, no inference is to be drawn with regard to their organization, either from the sprouts or from the branches exhibited by the corpuscles.

My observation with regard to the origin of sprouts throws much doubt on the phenomena of growth, of which I spoke above. Having once determined that the smaller corpuscles blend with the larger, why should the smaller ones not grow in consequence of the aggregation upon them of still smaller ones? It is true that the corpuscles, whose growth I witnessed, showed no signs that their growth was due to apposition, but that is nothing to the purpose.

My observations have, therefore, shown that the corpuscles appear in the field of vision at first so small that they can scarcely be perceived. Hence corpuscles must exist of an exceedingly minute size. But further, it is not improbable that they exist at the outset beyond the limits of vision, and only become visible through their growth. What prevents us also from supposing that the corpuscles, while growing before our eyes, grow by the apposition of smaller invisible bodies? It will be objected that we have no example of such growth in any non-crystalline bodies; but do we know of any instance in which an organism grows so rapidly as must be the case when, in the course of an hour, it increases from the limits of invisibility with an immersion lens No. 10 up to the size of a very large nucleus?

It therefore appears to me conclusive, that we can decide nothing as to the nature of the corpuscles from their increase of size. Thus much only is determined, that we have to do with entirely unknown structures.

Meanwhile I had observed another fact which led me somewhat nearer to a conclusion as to the nature of these bodies. I had ascertained that their chemical reaction is different immediately after their appearance upon the heatable table from what it is when they have been developed to a large size by being kept in a moist chamber for several days. In the latter case they are but little affected by acids or alkalies: they shrink a little, but are not destroyed. In an early stage of their existence, however, they are destroyed by acids and alkalies, and even by water. For this reason it is important that the specimen at the outset should be protected from water. When once grown, they will survive for days, even when the blood-corpuscles have been destroyed by moisture. This peculiarity can be readily explained under the supposition that these bodies are organisms. In that case they would have their youth and their adult life; and these would correspond to the early and the late stages of animal cells. In the former their outer layers would be relatively soft and in the latter hard.

If, however, we suppose that the bodies are not living but consist of colloid substances, the possibility that their outer layers may then also become hardened in the course of time, is not excluded.

With these doubtful conclusions, I was now on the point of terminating my investigations with regard to this question, and wanted only to try if a still higher degree of heat would not afford useful information. I had already made the attempt before with the blood of another patient, and the bodies which had gradually appeared had again disappeared through the formation of vacuoles. Now I wished at least to investigate the development of the vacuoles.

Upon warming a specimen of the blood of the above-mentioned patient very slowly and carefully up to about 38° Centigrade, I saw a remarkable sight. A perfectly clear plasma-interspace was in the course of about fifteen minutes so filled with very fine bodies, that I might have supposed that a precipitate had taken place. It was scarcely possible to watch the development of any one body. Their number was too great and they lay too near each other; after necessarily resting my eyes for a moment I could not be certain that I was really looking at the same one as before. One thing, however, was certain, the number of the bodies was gradually increasing, and soon some of them were so large that I could decidedly recognize them as Lostorfer's corpuscles. I noticed with surprise that a large number were provided with bulbous-shaped projections. I now fixed my eye, so long as I could look continuously, upon one of these, and found that the two bodies, the larger and the smaller, soon approached each other and again rapidly became separated. After this observation, which was somewhat trying to the eyes, I was obliged to rest for a short time, and whenever I commenced again I was obliged, for reasons already given, to watch a new pair, of which, as before stated, there were many in the field. I first noticed that the two bodies always had a swinging to and fro motion, as if they were firmly bound together. By changing the light I succeeded occasionally in seeing the thin and structureless thread which bound them together. Finally, I observed most distinctly how two such bodies slowly approached each other, then again separated, once more approached, and once more separated, and finally broke suddenly apart.

The number of the granules apparently still further increased, the field of vision was thickly scattered with them, but they did not attain to a considerable size; they remained much smaller than when more slowly developed at a temperature of 22°–25° Centigrade. In spite of careful observation I did not at this time succeed in observing any union between two corpuscles; although, in many cases, I saw the bond of union between them becoming broader and shorter, so that occasionally the two appeared to be one with a broad crevice upon it. Still even this crevice became broader and narrower, and respectively longer and shorter at intervals.

After these same phenomena had been observed again on the following day in blood from the same patient and under the same conditions, I regarded the chief question as answered. So far as we know, the phenomenon of repeated approach and separation between two bodies can only be explained upon the supposition that their bond of union is contractile and that the bodies themselves are organisms.

The phenomena of growth now assumed greater precision. I have before remarked that, if we observe the running together of two fluid bodies, we may explain the growth in question as an instance of mere apposition. I only stated, however, how I explained the matter to myself, before having further observations at my disposal, and I coerced the circumstances so as to leave no room for a supposition which was open to objections; for in all my observations of the union of two of the bodies I never saw such a running together as takes place between two drops of fluid. When two drops of fluid are lying against each other they may for some time adhere to each other and present the form of a sprout; but so soon as their surfaces at any point are broken, and so soon as their masses become confluent they suddenly form one drop. In the case of the corpuscles this process went on slowly; the contours gradually changed; the form of a sprout was changed into that of a biscuit; then one incision after the other became effaced; and even then upon the upper, or upon the highest surface was a line of separation visible, until finally an oblong form was established without trace of division. In this oblong form, the bodies continued for some time longer. I saw repeatedly that facets were even at this time formed and then became effaced. The final result of all these changes was a globular form, with which the motions ceased. I was not willing to regard these slight changes of form as indications of life, because I could not observe the disappearance and reappearance of distinct forms. I was well aware, however, that these changes of form are frequently present in protracted processes of division. It was also just as probable at least to suppose that two bodies lying near each other, and that suddenly approached each other, were bound together by a contractile thread, as that they were approximated by mutual attraction.

In the processes of division to be seen in the tissues of a frog, when portions of the same have been laid bare or have been cut out of this animal, I have often seen how two halves of one cell separated from each other until they were only united by a thin thread; how the thread sometimes changed its optical characters, until it became invisible; how the division was then apparently complete, and yet the products of division again approached each other, and gradually united. All experienced pathologists are also conversant with the fact, that pus corpuscles, so long as they are exposed to certain conditions of division, vegetate in such a manner that they do not attain any considerable size. On the contrary, when the conditions are unfavourable for division, their growth is considerable, and they then begin to form permanent tissue. This observation corresponds in every respect with the action of our corpuscles, which remarkably increased in size at a temperature of 22–25° C., while at the temperature of 38° C. they grew less, but increased in number instead.

We have, therefore, besides the appearances observed on warming the preparations, a noticeable series of indications in favour of the supposition that the bodies are organisms; indications which are of themselves not sufficient to prove the supposition, but which fall in with it exceedingly well.

We have to do with organisms which are developed only very slowly at a temperature below 10° C., and at a decidedly lower temperature perhaps not at all; at a temperature of 20–25° C., their development is somewhat rapid, and is still more rapid at the temperature of the human body. When they have once attained a certain size, they then remain in the form of globules or discs (in many cases it was not possible for me to make the differential diagnosis), either in a state of rest, or as dead bodies; they can then be kept for days, even when the preparation of blood is destroyed by moisture.

These organisms increase by sprouts or by division. The outgrowth of large threads or filaments was not, however, observed in any place, or under any of the conditions to which I subjected them.

Their development is essentially favoured by the neighbourhood of a large number of blood-corpuscles, and again, by the neighbourhood of air bubbles. They will usually first be found where a plasma-interspace is bounded on one side by air, and on the other side by a thick layer of blood-corpuscles. When the preparations are put up in the manner above described, and are first examined over their entire margin, the bodies can scarcely be overlooked, if they make their appearance at all.

When they have grown under my own eyes, they have very decidedly spread from the margin, and, therefore, from the confines of the air towards the centre of the preparation. Still it is not to be understood that I have seen how the bodies advanced. I have on the contrary observed that the finest granules always begin to be visible at the same time in one zone; and first in a zone in the neighbourhood of an air bubble. In a short time, the whole of this plasma-interspace would be filled with them, and only afterwards could I perceive analogous appearances in the interspace the next farthest removed.

With regard to the sources from which these organisms proceed, we have the following alternatives. They arise either from the air or from the blood; and in the latter case their germs already existed in the circulating fluid, or they sprung up subsequently by spontaneous generation.

The last portion of the alternative will indeed find few advocates, and I myself would not be included among the number. But nobody will deny that in this case *generatio æquivoca* must come into consideration as one of the possi bilities; for so soon as we have gone so far as to assert, that organisms arise from germs which are not to be seen with the best microscopes in existence, we assert something which cannot be proved, so long as the possibility of *generatio æquivoca* is not excluded with all imaginable certainty. *Generatio æquivoca* is not proved, but its possibility is not out of question.

In case the germs arise directly or indirectly from the air, we have perhaps to do with organisms which are well known under other forms, perhaps with bacteria, which finally appear in every preparation that is allowed to stand. Only we must then suppose that they assume in the blood of certain men, a mode and form of development, which, so far as I know, have never hitherto been discovered.

The fact that their development first begins where the plasma borders upon a layer of air, is perhaps in favour of their arising from the air. But it is also to be borne in mind that perhaps the air in the neighbourhood only favours their development; and this is the more worthy of consideration, since I have found that the development proceeds most favourably when the layer of blood, bounding the plasma-interspace upon the opposite side, is somewhat thick.

Let us now suppose that these newly known organisms arise neither directly nor indirectly from the air, and also not by spontaneous generation. We must here consider, that in the blood of one individual, derivatives from the cells of this individual or of other similar individuals may circulate, which the first obtained from the secretions of his parents or through contagion from one individual to another. The supposition that such derivatives form cells, which in consequence of their smallness are not visible under the best microscopes, is indeed entirely hypothetical. It must, however, be confessed that the existence of such is not at the outset to be excluded.

I turn now to the second question, viz., whether the organisms in question are present only in the blood of syphilitic persons? This question I must at the outset answer in the negative.

I have examined, in all, thirteen cases of general syphilis, and in these I found the bodies in nine cases in large number; in two cases they were certainly not to be found, and in two cases they were so few that for reasons hereafter to be given I was obliged to regard the result as negative. Among the cases which I have examined, we have, therefore, nine successful and four unsuccessful.

At the commencement of my investigation I found no trace of these bodies in ten cases of healthy, well nourished individuals, in one case of pneumonia, one of heart-disease, four cases of typhus abdominalis, one of typhus exanthematicus, and ten cases of smallpox.

The first case of lupus which I examined showed them in considerable number, and in nine more cases of lupus I found them once again; so that they were present in two out of ten cases of lupus.

After this experience, the matter, as Lostorfer had represented it, appeared to gain in probability. I had found then out of thirty-seven non-syphilitic persons only in two, and in these two cases the supposition was allowable that between lupus and syphilis there is no absolute distinction.

In the meanwhile, a circumstance occurred which turned my attention in a new direction. The patient above mentioned, whose blood afforded me an opportunity to observe the development of the corpuscles in so short a time, had several pretty severe attacks of hæmoptysis. Since I had observed the appearances which I have described in no other case so well marked as in this, the idea that deficient nutrition either alone or in combination with some other general disease, might have an essential influence in the production of the bodies, forced itself upon me. I therefore determined to examine the blood of persons suffering with severe chronic affections. My examinations were, indeed, few in number, but they were amply sufficient to enable me to decide the question. I found the bodies in large numbers in one case of carcinoma ventriculi, and in two cases of tuberculosis, and in all three cases on the second day of keeping the specimens. Twice I also found them in moderate numbers in another case of advanced disturbance of the nutrition, in which Bright's disease was combined with disease of the heart; and again in a case of anæmia following variola, the question appeared to me to be settled so far as was desirable for the present.

The investigation of these cases justified the decision that the organisms we have described are not exclusively to be found in the blood of syphilitic persons.

When we, however, consider that I failed to find the corpuscles in the blood of a very considerable number of persons, a portion of whom were healthy and the remainder affected with acute diseases, we cannot deny that Lostorfer's discovery is of some consequence in the pathology and especially in the doctrines of syphilis.

I will not assert that these bodies are not present in the blood of sound persons, and of persons affected with acute diseases. The number of cases which I examined is much too small for such an assertion. Thus much, however, is evident from my observations, that these new elements of the blood are present —seldom in sound persons and in persons with acute diseases—but very frequently in persons suffering from long continued chronic disturbances of the nutrition, and in persons affected with syphilis. We must now wait for the results of farther investigations. Should it be proved that my observations are correct, or nearly so, when applied to a large number of cases, I may have something further to say about the facts.

In conclusion I wish to show that the possibility of a very close connection between Lostorfer's corpuscles and the appearances included under the name of syphilis, is for the present not to be rejected. This will chiefly depend upon the question, whether the germs of these bodies were or were not previously present in the blood. If the latter be true, then indeed the supposition of such a near connection will be little justified. For it will then be more natural to suppose that there exists in the blood of certain persons a chemical condition, which exerts a favourable influence for the development of organisms coming from without. Should it, however, appear that the germs exist in the blood, then we shall have reason to suppose that organisms under certain conditions may assume certain peculiarities, and also among others, those peculiarities which we ascribe to the syphilitic virus.

These considerations will also be justified if larger statistics should prove incontestibly that the organisms are really present in the blood of all men who are affected with long-continued disturbance of their nutrition. For there is nothing against the supposition that the syphilitic virus may be generated in man under conditions which are unknown to us; that long-continued disturbance of the nutrition establishes such conditions, and that the virus first assumes its peculiarities under certain conditions, perhaps when it passes in single or manifold descendence from one individual to another.

The circumstance, that these bodies were found in large number precisely in cases of syphilis, carcinoma, and tuberculosis, is surely not opposed to such an assumption.

The circumstance, that in all three diseases we meet with a series of wholly unexplained phenomena, should stimulate us to follow every track that may lead to an explanation so long as it is scientifically justified.

Finally, the circumstance, that my numerous and careful investigations of the blood of syphilitic persons were fruitless in every other direction than that stated by Lostorfer, may serve to further test his discovery until we can obtain light as to its value.

# AMERICAN INTELLIGENCE.

## ORIGINAL COMMUNICATIONS.

*On the supposed Action of Quinia on the Gravid Uterus.* By JAMES BROWN, M.D., of Newcomerstown, Ohio.

I have spent about thirty years in the practice of medicine in the Tuscarawas valley, where miasmatic influences stamp their peculiar impress upon almost every form of disease, making quinia a prime necessity throughout the successive seasons of the year. I do not hesitate to prescribe it without reference to the *fact* or the *stage* of pregnancy. I give it not only with a view to arrest an attack of intermitting or remitting fever, or to support and sustain the powers of life, sinking under the influence of disease which I cannot cut short, but I give it to pregnant women the same as to other patients, in conditions of comparative and comfortable health, with a view to anticipate and ward off an expected *return* of ague.

In this long, extensive, and varied experience in the use of the remedy in question, I have never been led to suspect it of any power or tendency, in proper doses, to awaken uterine contractions, or in any way to disturb the normal functions of the uterine system.

---

*Is Quinia an Oxytocic?* By G. ERICKSON, M.D., of Kendallville, Ind.

My medical experience extends over a period of eighteen years, in one of the most malarial sections of northern Indiana, where, during some seasons, in my earlier practice, there were not enough well persons to take care of those suffering from malarial diseases. In those primitive times here a very large majority of the families were young, consequently the obstetric cases were much greater in proportion to the population, than at the present time. Quinia was the almost universal remedy for all malarious diseases, prescribed freely, from twenty to forty grains in intermittents and remittents, but in the latter it generally had to be repeated. In the pernicious forms of these diseases, from sixty to one hundred grains were given, usually in the course of a few hours, yet even with this quantity the remedy had usually to be repeated, though in diminished doses.

This treatment was practised in pregnant patients just as in others, and but few females escaped the fever at some period of gestation, so prevalent was it.

Yet not in a single instance did it develop uterine contractions "de novo," but if they existed at the time quinia was given, then, in a certain number of cases, it certainly did increase their force, but had but little influence on their frequency. Its effects as an oxytocic were most marked in the advanced stages of labours, especially at or near the full term of gestation, while in the earlier stages, especially in miscarriages, it seldom produced any perceptible effect upon the uterine contractions.

The severer forms of malarial diseases were not an uncommon cause of miscarriages, if allowed to continue, but even when moderate uterine contractions had commenced and no hemorrhage had occurred, these contractions usually ceased if the paroxysms of the disease were promptly arrested by quinia.

Morphia prevented its oxytocic effect.

My conclusions may be briefly stated to be these: That quinia does not develop uterine contractions "de novo."

That if they exist in a moderate degree it has but little or no influence over them. But in advanced stages of labours, especially at or near full term of gestation, then its effects, in some cases, are more marked as an oxytocic, though in a minority of cases.

Its effect was to increase the force rather than the frequency of uterine contractions. Did it possess a strong tendency to produce miscarriages, there would have been but a very small natural increase of the population here in those times, but the reverse was the fact.

---

### *Case of Bending of the Bones of the Forearm in a Child two years old.*

By W. C. EICHELBERGER, M.D., of Eugene, Ind.

Was called Sep. 3, 1871, to see a girl, about two years old, who, while playing, fell from a step about twelve inches in height, striking principally upon her right hand. Upon examination, found a hard projection, upon the dorsal surface of the right forearm, at the junction of the middle and lower thirds of arm; with a concavity on the palmar surface at point of injury; no crepitation or pain, pronation and supination but slightly interfered with. Upon rotating the arm so that the radial border became the upper one, it could be seen that there was a bending of both radius and ulna at the seat of injury. I diagnosed angular curvature of both bones; the data for the opinion being, absence of all of the usual signs of fracture in this region, no pain, slight interference with rotary action of arm, and age of the child.

The radius and ulna were bent at an angle of about eight degrees.

The injury was treated by placing a firm compress upon the projection, then applying long splints, as directed in fractures of the forearm, and over all a roller bandage, firmly applied, the apparatus reapplied whenever necessary, so as to keep up constant pressure upon the projection formed by the bending of the bones. The dressings were removed in four weeks from receipt of injury, when the limb was found to be restored to its normal condition. Any one not acquainted with the circumstances would be unable to tell which was the injured arm.

---

### *Amenorrhœa relieved by the Hypodermic Use of Morphia and Atropia.*

By R. Z. LEEDS, M.D., of Hilliard, Ohio.

Miss J. F., æt. 18, has suffered from *suppressio mensium* at almost every period since puberty; often becoming delirious, biting her hands and raving in such a manner as to require force to restrain her from committing acts of violence. First menstruated at the age of 13; is very plethoric; weight, one hundred and seventy-five pounds; accustomed to much exercise. The menses occur regularly, but nearly always cease after the first day or two; when she is seized with rigours, followed by pyrexia each day, until the time of menstruation is past. Her mind has been affected seriously by this return each month. Believing that amenorrhœa is not a disease, but a symptom of some local or general disease, we have treated her accordingly with iron, quinia, strychnia, etc., without much benefit.

February 3d. Last night she had scarcely any sleep, but is more quiet this morning. At three o'clock P.M., had appreciable rigors, followed by fever. I saw her at five o'clock; she was then unconscious and raving; pulse ninety-eight; respiration sixteen. I injected at the insertion of the deltoid eight minims of Dr. Bartholow's solution of morphia and atropia (morphia grs. xvi; atropia grs. ij; aqua dist. ℥j). Eight minims of this solution contains about one-thirtieth of a grain of sulphate of atropia and one-sixth of a grain of the sulphate of morphia. In fifteen minutes after the injection the patient became quiet. In thirty minutes was sleeping heavily. The pulse-rate began to rise, and in three-quarters of an hour from the administration it was one hundred and sixteen; at the same time respiration had fallen to twelve. Two hours from giving the injection, respiration and circulation had become nearly normal, the patient had a good night's sleep, and has had no return of the paroxysm since. In this case venesection would, I think, have been more effectual. By bleeding every month, between the menstrual epochs, I doubt not this periodical trouble would have been averted, but bloodletting is so undeservedly unpopular under any circumstances, that patients are not willing to submit to it.

*Case of Triplets.* By Dr. L. S. Murray, of Modena, Ohio.

I was called at 11 A.M., January 3, 1872, to attend Mrs. T., æt. 30 years, in her third confinement, and who was then in about the eighth month of pregnancy. The pains were normal, and in about half an hour after my arrival found, on examination, the sac ruptured and a head presentation, which was speedily delivered. I had scarcely time to tie the cord and remove the child, when a second sac of membranes presented at the vulva, which, being ruptured, the breech of a child presented and was expelled in about twenty minutes after the first. On passing the hand over the abdomen, the uterus was found still large, and pains continued, when the sac of a third child presented at the vulva, which I ruptured, and the feet presented, and was delivered in about half an hour after the second. The delivery of the three children being thus completed in about fifty minutes. All were females, weighing about three pounds apiece. There were three distinct placentæ, which were removed in thirty minutes after the birth of the last child. The uterus contracted readily, with but little hemorrhage. Patient's pulse sixty-eight, and of fair strength. About two months previous to delivery the mother had an attack of pneumonia, since which time she had been suffering from a severe cough and partial loss of voice, to which I attribute her premature labor. The cough yielded to treatment, and the mother made a complete recovery.

---

## DOMESTIC SUMMARY.

*Carbolic Acid as an Anæsthetic.*—Dr. Andrew H. Smith reported to the Medical Society of the County of New York, April 22, 1872 (*New York Med. Journ.*, June, 1872) some experiments made upon himself which fully confirm the statement of Dr. J. H. Bill (see No. of this Journal for October, 1870) as to the local anæsthetic power of carbolic acid.

"In my first experiment," says Dr. Smith, "I painted a spot on the forearm, about an inch in diameter, with carbolic acid of about the strength of 85 per cent. For about a minute there was a slight burning sensation, after which the integument became entirely insensible, the cuticle being whitened and shrivelled, and the spot slightly elevated. I then with a scalpel made an incision about half an inch in length through the whole thickness of the integument. This was done without even feeling the contact of the knife. The capillary circulation seemed not to be materially interfered with, as the blood flowed as freely as it would from a similar wound under ordinary circumstances. The reparative process was also not impaired, adhesion taking place immediately. Three hours after the application of the acid a needle could be thrust freely into the skin without causing pain.

"In the second experiment carbolic acid was applied as before, and ten minutes after a fly-blister was placed upon the spot. The blister remained eight and a half hours without causing any pain, and without producing vesication.

"In two instances I have applied the acid previous to incising a whitlow. The operation was almost painless, but, as the whitlow was in each case of the superficial variety, the test was not entirely conclusive.

"Inhaled in the form of spray, I have found the acid very useful in allaying irritation of the bronchial mucous membrane; coughs which have resisted all ordinary treatment have been immediately relieved, and in the course of two or three days entirely removed.

"I would suggest the use of a strong solution of carbolic acid as a revulsive, in cases in which a continuous impression is desired. While causing but little suffering, it produces an intense hyperæmia of the skin, which persists for eight or ten days, and is followed by desquamation of the cuticle."

---

*Quinia as an Oxytocic.*—Dr. JAMES C. HARRIS expresses (*American Practitioner*, April, 1872) his disbelief that quinia originates contractions in the gravid uterus. He states that during the year 1839 he practised in Cedar Bluff, Ala., where during the autumn intermittent fever prevailed to a considerable extent. "In some of these cases," he says, "either from the severity or frequent recurrence of the chills, or both, the pain and aching in the lumbar and pelvic regions were so severe in several pregnant ladies as to produce abortion or premature labour. As cinchona or any of its salts could not at that time be secured in sufficient quantities at any price, I am certain that during this fall and the early part of the winter I attended as many as four cases of premature labour, the result alone of the above-mentioned causes, and heard of the occurrence of at least as many more well-authenticated similar cases in the hands of others. In two of the cases attended by me the children were born during the chill. Late in the fall, still having several ladies under my care suffering from chronic chills and fever, who were pregnant, and threatened at the recurrence of nearly every chill, from the lumbar and pelvic pains, with premature labour, I sent a messenger to Huntsville and purchased two or three ounces of quinia, with which, as soon as it arrived, properly conjoined with calomel or blue mass or morphia, as each particular case appeared to require, I went to work, and soon had the satisfaction to learn that their nausea, vomiting, lumbar and pelvic pains were relieved, and their chills and fever cured. Never since this time have I believed that quinia, as ordinarily administered, possessed any properties that were in the least calculated to produce contractions in the gravid uterus; but on the contrary, under certain circumstances, have always relied upon it as the very best remedy we know anything of to destroy the cause and break up the concatenation of symptoms upon which, among us, abortion frequently depends."

---

*Cæsarean Operations in the United Stases.*—Dr. ROBERT P. HARRIS has, with much industry, culled reports of the Cæsarean operations performed in the United States, and gives (*Amer. Journ. Obstetrics*, Feb. 1872) the following table of these operations performed during or at the close of the first day of labour, showing the value of timely surgical interference. In all the cases but one the child was removed alive.

TABLE OF THE CÆSAREAN OPERATIONS IN THE UNITED STATES

*Which were performed during or at the close of the first day of labour, showing the value of timely surgical interference. In all of the cases but one, the child was removed alive.*

| Age. | Year. | Locality. | Age. | Colour. | Cause of difficulty. | Name of operator. | Result to woman. | Result to child. | Cause of death. | Hours in labour before operation. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1835 | Philadelphia, Pa. ... | 26 | White | Deformed pelvis | Dr. Wm. Gibson ... | Recovered | Alive | .............. | A few hours only. |
| 2 | 1837 | " " | 28 | " | " " | " " " ... | " | " | .............. | " " " |
| 3 | 1838 | New York City....... | 42 | " | " " | " R. K. Hoffman | " | Dead | Child deformed, and died soon after delivery | Twenty-four hours. |
| 4 | 1838 | Near N. Orleans, La. | ... | Black | Not any.......... | Drunken midwife.. | " | Alive | .............. | A few hours. |
| 5 | 1840 | Hamilton, Ohio...... | ... | White | Deformed pelvis | Dr. Cyrus Falconer | Died....... | " | Peritonitis.................. | Less than 24 hours. |
| 6 | 1846 | Thibodeaux, La...... | 30 | Black | Exostosis......... | " J. A. Scudday | Recovered | Dead | Child feeble, and died soon after delivery | Twelve hours. |
| 7 | 1849 | Thibodeaux, La...... | 33 | " | " ........ | " " " | " | Alive | .............. | A few hours. |
| 8 | 1849 | Richmond, Miss. .... | ... | " | Ventral hernia .. | " B. Harvey ...... | Died in 3 weeks | " | Irritative fever........... | " " |
| 9 | 1852 | Wilcox County, Ala. | 31 | " | Impacted head .. | " Zacch. Nettles | Recovered | " | .............. | Fifteen hours. |
| 10 | 1854 | Oktibbeha, Miss. .... | 26 | " | Deformed pelvis | " W. H. Merinar | " | " | .............. | Before rupture of membranes. |
| 11 | 1855 | Oktibbeha, Miss. .... | 27 | " | " " | " " " | Died....... | " | Peritonitis.................. | A few hours. |
| 12 | 1856 | Richmond, Va........ | 23 | " | " " | " Charles S. Mills | Recovered | " | .............. | $4\frac{1}{2}$ hours actively. |
| 13 | 1857 | Council Bluffs, Iowa | 20 | White | " " | " W.F.McClelland | " | " | .............. | Early. |
| 14 | 1861 | Hamburg, Ark. ...... | ... | Black | " " | " I. J. Newton.... | " | " | .............. | A few hours. |
| 15 | 1863 | Jefferson Co., Ind... | ... | White | Fibrous tumour | " J. W. Conway.. | " | Dead | Cause not given .......... | Fourteen hours. |
| 16 | 1869 | Philadelphia, Pa. ... | 31 | " | Deformed pelvis | " Walter F. Atlee | Died. ...... | Alive | Obstruction of bowels ... | A few hours. |
| 17 | 1869 | Ann Arbor, Mich. ... | 35 | " | " " | " Abram Sager... | " | " | Secondary shock ......... | Eight or nine hours. |

| | | |
|---|---|---|
| White women, 8 | Recovered, 5 | Children saved, 6 |
| Black " 9 | " 7 | " " 8 |

$73\frac{10}{13}$ per cent. of women, and $86\frac{2}{13}$ of children saved by operating early.

*Chloral Hydrate in Traumatic Tetanus.*—Dr. Jos. R. Beck records (*St. Louis Med. and Surg. Journ.*, June, 1872) a case of traumatic tetanus in a railroad employee, to whom he gave chloral hydrate in doses of sixty grains every half hour until seven doses were taken, when he fell asleep and slept for thirty hours without stirring. When seen by Dr. B. half an hour after he awoke he said he felt as well as ever, with the exception of much muscular soreness in the spinal region and that of the backs of the thighs and legs, and some stiffness of the jaws. He had no subsequent spasm, and no further treatment was ordered for him. The slight stiffness wore off in two or three days; the after-effects of the chloral were *nil;* the wounds healed up rapidly; and to this day he has experienced no bad effects from his heroic treatment. He took four hundred and twenty grains of chloral in just three and a half hours.

*Monobromide of Camphor.*—Prof. Deueffe, of Ghent, states (*Presse Med. Belge*) that he has been in the habit for more than two years of using this combination of bromine and camphor, and finds it an excellent sedative to the nervous system and in delirium tremens. Dr. Wm. A. Hammond confirms (*New York Med. Journal*, May, 1872) this statement. He says, "My experience with the monobromide of camphor, though thus far limited, is eminently satisfactory. I have employed it in two cases of infantile convulsions due to the irritation of teething, with the effect in each instance of preventing the further occurrence of paroxysms which, previously to its administration, had been very frequent. In each case a grain was given every hour, rubbed up with a little mucilage of acacia. Three doses were sufficient in one, and two in the other case. The children were aged respectively fifteen and eighteen months.

"In a very obstinate case of hysteria occurring in a young married lady in the form of paroxysms of weeping and laughing, alternating with epileptiform and choreiform convulsions, I gave the monobromide of camphor in doses of four grains every hour. The influence was distinctly perceived after two doses were taken, but ten were necessary to entirely break up the attack. This was a very favorable result, as all previous seizures had lasted for from five to eleven days, uninfluenced by medication or moral suasion.

"I have also employed it with excellent effect in several cases of headache occurring in women and young girls, and due to mental excitement and excessive study. One dose of four grains was generally sufficient to cut short the attack. In two cases, three doses at intervals of half an hour were necessary.

"In wakefulness, the result as it so generally is of cerebral hyperæmia, the monobromide of camphor appears to be greatly inferior to the bromide of calcium or even the other bromides. But it is apparently indicated in delirium tremens. I have not yet had the opportunity of trying it in this disease, but I should not hesitate in a case of the affection to administer it in doses of five grains every hour or half-hour, with the confident expectation that sedation and sleep would result.

"The monobromide of camphor may be given in the form of pill, with conserve of roses as the excipient, or as a mixture with mucilage of gum-arabic and syrup. The dose for adults ranges from two to five grains."

*Recurrent Variola.*—Dr. M. E. Webb reports (*Boston Med. and Surg. Journal*, June 6, 1872) an interesting case of this in a healthy and well nourished child aged seven months, who a month previously had been unsuccessfully vaccinated. The disease was discrete variola, so diagnosed by competent authorities. The child, probably, was infected by the sister, and a fatal case of the disease died some days after. The child perfectly recovered, with several well marked scars on various parts of the body. Five weeks after the child had a second attack which proved fatal on the eighth day, during the secondary fever.

Dr. W. was informed by Dr. Green, City Physician, that he had seen during the present year seven cases in which variola had occurred a second time. In these, however, many years (from fifteen to forty) had elapsed between the first and second attacks, while in the case first cited, the disease occurred in the short space of five weeks.

# UNIVERSITY OF PENNSYLVANIA.

## MEDICAL DEPARTMENT.

### ONE HUNDRED AND SEVENTH SESSION.

*Ninth Street, above Chestnut, Philadelphia.*

**The Lectures of the Session of 1872–3 will commence on the First Monday (7th) of October, and close on the last day of February ensuing.**

### MEDICAL FACULTY.

| | |
|---|---|
| George B. Wood, M.D., | Emeritus Professor of Theory and Practice of Medicine. |
| Hugh L. Hodge, M.D., | Emeritus Professor of Obstetrics and the Diseases of Women and Children. |
| Henry H. Smith, M.D., | Emeritus Professor of Surgery. |
| Joseph Carson, M.D., | Professor of Materia Medica and Pharmacy. |
| Robert E. Rogers, M.D., | Professor of Chemistry. |
| Joseph Leidy, M.D., | Professor of Anatomy. |
| Francis G. Smith, M.D., | Professor of Institutes of Medicine. |
| R. A. F. Penrose, M.D., | Professor of Obstetrics and the Diseases of Women and Children. |
| Alfred Stillé, M.D., | Professor of Theory and Practice of Medicine, and of Clinical Medicine. |
| D. Hayes Agnew, M.D., | Professor of Surgery. |
| H. Lenox Hodge, M.D., | Demonstrator of Anatomy. |

Clinical Instruction is given daily throughout the year, in the Medical Hall, by the Professors and Clinical Lecturers and at the Hospitals. At the Philadelphia Hospital, and at the Pennsylvania Hospital, the instruction is free.

The Dissecting Rooms, under the superintendence of the Professor of Anatomy and the Demonstrator, are open from the first of September.

The room for Operative Surgery and the Application of Bandages, etc. etc., is open early in September and throughout the Session, under the supervision of the Professor of Surgery.

### SUMMER MEDICAL ASSOCIATION OF THE UNIVERSITY.

| | |
|---|---|
| Practical Chemistry . . . . | Prof. Robert E. Rogers, M.D. |
| Physiology . . . . . . . | Prof. Francis G. Smith, M.D. |
| The Cell Doctrine . . . . . | Prof. Joseph Leidy, M.D. |
| Regional Anatomy . . . . | H. Lenox Hodge, M.D. |
| Microscopy . . . . . . . | James Tyson, M.D. |
| Clinical Surgery . . . . . | Prof. D. Hayes Agnew, M.D. |
| Morbid Anatomy . . . . . | Joseph G. Richardson, M.D. |
| Clinical Medicine and Physical Diagnosis | William Pepper, M.D. |
| Diseases of Women and Children . . | William Goodell, M.D. |
| Surgical Diseases of the Mouth . . | James E. Garretson, M.D. |
| Diseases of the Eye and Ear . . . | William F. Norris, M.D.<br>Geo. Strawbridge, M.D. |
| Diseases of the Skin . . . . | Louis A. Duhring, M.D. |
| Diseases of the Nervous System . . | Horatio C. Wood, Jr., M.D. |

Lectures on the above subjects are delivered by the members of the Summer Association annually during the months of April, May, and June, September, and the early part of October.

The lectures of this Preliminary Course will this year begin on Monday, September 2, and continue until the opening of the Regular Session. These Lectures are free to all matriculants of the University, upon registering their names with the Secretary of the Association, who will furnish them with tickets.

EXPENSES.—Fees for the Course of Lectures, $140. Matriculating Fee (paid once only), $5. Graduating Fee, $30.

### AUXILIARY FACULTY OF MEDICINE.

HARRISON ALLEN, M.D., Professor of Zoology and Comparative Anatomy.
HORATIO C. WOOD, Jr., M.D., Professor of Botany.
FERDINAND V. HAYDEN, M.D., Professor of Mineralogy and Geology.
HENRY HARTSHORNE, M.D., Professor of Hygiene.
JOHN J. REESE, M.D., Professor of Medical Jurisprudence, including Toxicology.

The 8th Course of the Auxiliary Lectures will begin on the last Monday in March, and terminate the last Thursday in June. These lectures are free to all Students of the regular Medical Course.

R. E. ROGERS, M.D., *Dean of the Medical Faculty*, University Building.

W. H. Salvador, *Janitor*, University Building.

P. S.—Board may be had at from $5 00 to $6 00 per week.

*** *Alumni of this Department who are permanently settled, and other medical practitioners who desire to receive the Catalogue and Announcement regularly, are respectfully requested to send their addresses to the Dean, P. O. Box* 2838, *Philadelphia.*

# HARVARD UNIVERSITY.

## MEDICAL DEPARTMENT—BOSTON, MASS., 1872-73.

*Changes in the Plan of Study and the Requisites for a Degree.*

EIGHTY-NINTH ANNUAL ANNOUNCEMENT.

The plan of study in this School has been radically changed. Instruction will hereafter be given by lectures, recitations, clinical teaching, and practical exercises uniformly distributed throughout the academic year. This year begins September 26th, and ends June 25th; it will be divided into two equal terms, with a recess of one week between them. Either of these two terms will be more than equivalent to the former "Winter Session," as regards the amount and character of the instruction.

The course of instruction has been greatly enlarged, so as to extend over three years, and has been so arranged as to carry the student progressively and systematically from one subject to another in a just and natural order.

In the subjects of anatomy, histology, chemistry, and pathological anatomy, laboratory work will be substituted for, or added to, the usual didactic lectures, and laboratory work will be as much required of every student as attendance at lectures and recitations.

Instead of the customary hasty, oral examination for the degree of Doctor of Medicine, held at the end of the three years' period of study, a series of examinations on all the main subjects of medical instruction has been distributed for regular students throughout the whole three years; but they may be passed by other students either all at once at the end of their course, or, successively, at several times. Every candidate for the degree must hereafter pass a satisfactory examination in every one of the principal departments of medical instruction at some time during his period of study. The regular examinations will be held at the end of each year in June, a week before the opening of the School in September, and at the close of the first term in February. The general subjects of the Regular Course of study are:—

*For the first year*—Anatomy, Physiology, and General Chemistry.

*For the second year*—Medical Chemistry, Materia Medica, Pathological Anatomy, Theory and Practice of Medicine, Clinical Medicine, Surgery and Clinical Surgery.

*For the third year*—Pathological Anatomy, Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery and Clinical Surgery.

Students who take the regular course of the School will be divided into three classes according to their time of study and proficiency. Students may be admitted to advanced standing in the regular course; but all persons who apply for admission into the second or third year's class must pass an examination in the branches already pursued by the class to which they seek admission. Students who fail in any subject at one examination may be examined at the next examination. The regular examinations will be held in the following order:—

At the end of the first year—Anatomy, Physiology, and Chemistry.

" " " second year—Medical Chemistry, Materia Medica, and Pathological Anatomy.

" " " third year—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

Students who began their professional studies elsewhere may be admitted to the School and become candidates for a degree without joining the regular classes; such students may take up the subjects which they have not previously studied, in such order as may be thought best, passing the examinations at the beginning, middle, and end of each year.

Students who do not intend to offer themselves for a degree, may join the School for one term or more, and pay for instruction in such subjects as they select. Such students will be furnished, without examination, with certificates of attendance.

Requirements for a Degree.—Every candidate must be twenty-one years of age; must have studied medicine three full years, have spent at least one continuous year at this School, have passed the required examinations, and have presented a thesis.

Fees.—For Matriculation, $5; for the Year, $200; for either Term, $120; for Graduation, $30; for courses in single subjects, according to the detailed announcement.

☞ The above supersedes the old plan of instruction, and went into operation on September 28, 1871.

A blue Catalogue containing detailed information will be sent on addressing

JAMES W. HARRIS, *Secretary*,
Cambridge, Mass.

For special information, address

Dr. C. ELLIS, *Dean*,
111 Boylston Street, Boston.

## UNIVERSITY OF LOUISIANA—MEDICAL DEPARTMENT.

### NEW ORLEANS.

### FACULTY.

A. H. Cenas, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children.
James Jones, M.D., Professor of Obstetrics and Diseases of Women and Children.
T. G. Richardson, M D., Professor of General and Clinical Surgery.
Samuel M. Bemiss, M.D., Professor of the Theory and Practice of Medicine and Clinical Medicine.
Stanford E. Chaillé, M.D., Professor of Physiology and Pathological Anatomy.
Frank Hawthorn, M.D., Professor of Materia Medica and Therapeutics, and Clinical Medicine.
Joseph Jones, M.D., Professor of Chemistry and Clinical Medicine.
Samuel Logan, M.D., Professor of Anatomy and Clinical Surgery.
E. Souchon, M.D., Demonstrator of Anatomy.

The next annual course of instruction in this Department (now in the thirty-eighth year of its existence), will commence on Monday, the 18th day of November, 1872, and terminate on the second Saturday of March, 1873. Preliminary Lectures on Clinical Medicine and Surgery will be delivered in the amphitheatre of the Charity Hospital, beginning on the 18th of October, without any charge to students. The Anatomical Rooms will be opened at the same time. The members of the Faculty are Visiting Physicians and Surgeons to the Charity Hospital, and give instruction daily *at the bedside* of the sick. The hospital received during the past year 6637 patients, and offers unsurpassed advantages for the practical study of medicine and surgery.

*FEES.*—For all the lectures, $140; Matriculation, $5; Practical Anatomy, $10; Graduation, $30. Payment required in advance.

For further information, address

T. G. RICHARDSON, M.D., *Dean.*

---

## PRIVATE INSTRUCTION IN MEDICAL MICROSCOPY.

The applications of the Microscope in Medicine have of late years become so important, that its systematic employment in solving the problems of Diagnosis and *Prognosis* is almost a necessity, and well-educated communities will soon REQUIRE of their physicians a constant resort to its manifestly invaluable revelations respecting disease.

Experience in teaching microscopy, both by lectures to classes and by direct private tuition, has so far demonstrated the superiority of the latter method, that the subscriber proposes to continue his course of instruction to students and graduates, throughout the year, in series of fifteen lessons each, arranged in such a manner as to avoid interference with College Lectures, or other engagements.

Fee (including Handbook) . . . . . . $15 00

For full particulars, address

JOSEPH G. RICHARDSON, M.D.,
(Lecturer on Pathological Anatomy in the University of Pennsylvania, and Microscopist to the Pennsylvania Hospital.)
No. 1620 Chestnut Street, Philadelphia.

---

## UNIVERSITY OF MICHIGAN—MEDICAL DEPARTMENT.

The Lectures of the Session 1872–73 will commence on the first day of October, and continue for six months.

Besides the Clinical Lectures, four Diadactic Lectures will be delivered daily through the entire term.

Fees.—To students of Michigan, $20 for the first year; $10 for all subsequent years.

To all others, $35 for the first year, and $10 for all subsequent years.

For further information address,

ABM. SAGER, M.D.
Dean of the Medical Faculty, Ann Arbor, Michigan.

## ALBANY MEDICAL COLLEGE.

### TERM, 1872.

### FACULTY.

James McNaughton, M.D., President; Theory and Practice of Medicine.
James H. Armsby, M.D., Principles and Practice of Surgery and Clinical Surgery.
Edward R. Peaslee, M.D., LL.D., Diseases of Women and Children.
William P. Seymour, M.D., Obstetrics.
Meredith Clymer, M.D., Diseases of the Nervous System and of the Mind.
John V. Lansing, M.D., Physiology and Clinical Medicine.
Albert Van Derveer, M.D., General and Special Anatomy.
Henry R. Haskins, M.D., Surgical and Descriptive Anatomy.
George T. Stevens, M.D., Ophthalmic and Orthopedic Surgery.
John M. Bigelow, M.D., Materia Medica.
Maurice Perkins, A.M., M.D., Chemistry and Toxicology.
Hon. Ira Harris, LL.D., President of the Board of Trustees; Medical Jurisprudence.
Henry March, M.D., Curator of Museum.

The College Term commences on the first Tuesday of September. Six Lectures are given daily—three Clinical Lectures each week in the hospital. The usual surgical clinique is held in the College each Saturday.

Fees for the Course, $100; Matriculation, $5; Graduation, $25; Perpetual Ticket, $150. For Circulars, apply to

J. V. LANSING, M.D., *Registrar.*

---

## PHILADELPHIA SCHOOL OF ANATOMY,

*Chant Street, Tenth Street above Chestnut, opposite the Mercantile Library.*

### COURSES OF LECTURES ON PRACTICAL SUBJECTS.

The following Courses of Lectures will be delivered in this Institution during each Winter and Summer Session.

| | | |
|---|---|---|
| I. | Anatomy . . . . . . . . . | By Dr. W. W. KEEN. |
| II. | Operative Surgery . . . . . . . | " Dr. W. W. KEEN. |
| III. | Bandaging, Fractures, and Fracture Dressings . | " Dr. O. H. ALLIS, 1005 Walnut Street. |
| IV. | Physical Diagnosis . . . . . . . | " Dr. O. P. REX, 100 North 15th Street. |

The Course on ANATOMY begins the day after the Colleges open in October and in April, and consists of systematic Lectures, amply illustrated by the Class Microscope, Dissections, Models, &c.

The DISSECTING ROOMS are open all the year, except July and August, with a full supply of material.

Each of the other Courses begins one week later, and consists of practical demonstrations to the class, after which each member in turn is exercised in the various operations, applies the bandages or fracture dressings, or auscults and percusses the patients.

Fee for each Course . . . . . . $10.

For further information, apply to the Janitor, at the Rooms, or to

W. W. KEEN, M.D.,
1729 Chestnut Street. (3½ to 5 P.M.)

THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR OCTOBER 1872.

---

## ART. I.—*Experimental Researches on Pericarditis.* By S. H. CHAPMAN, M.D., of New York. (With 12 wood-cuts.)

As these observations furnish additional proof[1] of the truth of the opinions held by Stricker in his controversy with Cohnheim, it is necessary to direct attention to this interesting controversy, which has been continued since 1865 and renewed at the general assembly of scientific men at Leipzig in August of this year.

About two years after the discovery by Stricker[2] that red blood-corpuscles can emigrate through the injured walls of capillary vessels, Cohnheim[3] discovered, that, in the mesentery of the living frog, when drawn out of the abdominal cavity and prepared for microscopical research, large numbers of white corpuscles are to be seen emigrating from the vessels and wandering through the tissues. This discovery gave rise to the theory of Cohnheim, that pus-cells are emigrated white blood-corpuscles. He denied the truth of Virchow's theory that connective-tissue corpuscles undergo division during the inflammaory process in order to be transformed into pus-cells; and gave proof of his theory by the observation that the cornea corpuscles do not change during the process of inflammation in the cornea. Moreover he injected anilin into the bloodvessels before exciting the cornea, and found, after having produced an inflammation in this tissue, pus-cells in the inflamed cornea, bearing anilin. Cohnheim argued therefore the following results, namely: first, that pus-cells and white blood-corpuscles are (which is a well-known fact) not to be distinguished from each other; and secondly that the formation of pus-cells out of cornea corpuscles has never been really observed; thirdly, that the emigration of pus-like corpuscles is a well-observed fact; and fourthly, that the possibility of wandering of these cells into an irritated tissue is sufficiently known. He says therefore that it is a fact that pus-cells emigrate from the vessels and invade the neighbouring tissue, but it is only a not-proved hypothesis that cornea corpuscles can change into pus-cells. Stricker and Norris,[1] of Philadelphia, opposed that it is not true that the cornea corpuscles do not change in the inflammatory process. They observed that the stellated cornea cells (Cohnheim called them "fixed" cells) after the cornea had been excited to inflammation, draw back their processes, multiply their nuclei by division and become amœboid. Stricker observed directly the division of such larger cells into smaller ones. He argued then as follows: Pus-cells are, like white blood-corpuscles, young cells; and for this reason they are not to be distinguished from one another: a young cell, born of a cornea (stellate) cell by division, is amœboid, like a white blood-corpuscle, like all young cells; in seeing therefore a young cell (pus-cell) no one can make out from where it originates. The pigment anilin injected into the bloodvessels has been seen by Stricker and Norris in the stellated corpuscles of the inflamed cornea. The pigment bearers can therefore as well be daughters of these stellate cells as emigrated white blood-cells. The histologists of Cohnheim's school began to deny altogether the transformation of tissue into pus-cells. Stricker and his pupils, on the other hand, proved step by step that all living cells can change by division into pus-cells, thus returning to the embryonal stage.[2] Kundrat[3] proved this for the endothelia of the peritoneum. Durante[4] for the endothelia of the veins. S. H. Chapman[5] for the endothelia of the pericardium.

---

[1] The specimens collected by me upon this subject during these studies were exhibited by Professor Stricker in the course of his argument, for examination by the general assembly at Leipzig.

[2] Sitzungsberichte der Wiener Akademie, 1865.

[3] Virchow's Archiv, 1867.

At the suggestion and with the careful criticism of Professor Stricker, the studies described in the following pages were conducted in the Laboratory for Pathological Research, in order to compare artificially-produced pericarditis with the disease in man. In order to study to advantage the inflamed tissue, that is, to recognize slight changes from the normal condition, it was first necessary to become thoroughly acquainted with the elements of the normal pericardium; and in order to accomplish this, we began with healthy pericardia, both uncoloured, and coloured by gold and silver in the following manner.

---

[1] Studien aus dem Institute für experimentelle Pathologie, 1869.

[2] It is the theory of Stricker and his pupils that all living cells are liable, under the influence of inflammation, to divide and multiply into pus-cells or embryonal cells; that these embryonal cells are capable of fully developed growth, forming anew all the elements of a tissue; but that, as, in the production of species, only a small fraction of the embryos grows to full development, so, here, the great mass of embryonal cells is wasted as pus, while the small remnant alone attains a new and full growth.

[3] Medizinische Jahrbücher, 1871.

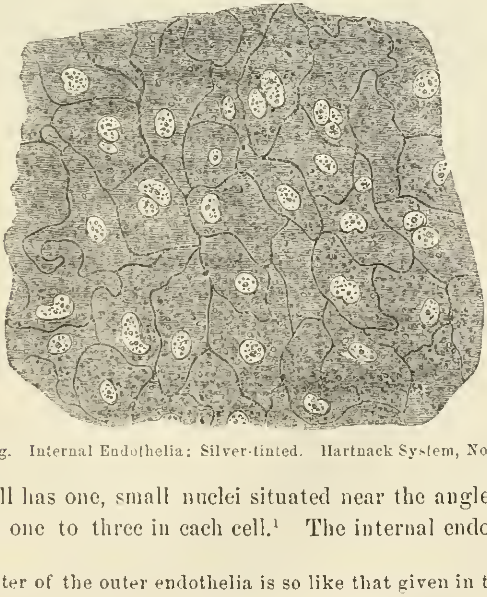
[4] Medizinische Jahrbücher, 1872.

[5] The same.

The animal having been placed upon a stretcher, the pericardium was quickly dissected out, and by means of a glass rod immersed in a solution of silver 1:200 for twenty minutes, or in solution of gold-chloride 1:100 for twenty-five or thirty minutes, and then transferred to slightly acidulated distilled water and set in a warm and light part of the room. Upon the second day the pericardium was suspended in a solution of glycerin and water in equal parts, or in dilute alcohol. Pericardia were also coloured by silver injections into the abdominal vein and treated afterwards in the above-mentioned manner. From the fourth to the sixth day the membranes were properly coloured for examination.

The connective-tissue, lymph, and bloodvessels have been thoroughly described in the *résumé* by E. Klein in Stricker's "Handbuch," pages 621–624; but the paricardial endothelia do not seem to have received the careful study which they deserve; for there were found characteristics sufficiently marked to be diagnostic of their belonging to the outer or inner surfaces, namely, the external endothelia are very irregular in shape, vary very much in size, and possess, in addition to the large nuclei of which each cell has one, small nuclei situated near the angles of the cells, varying from one to three in each cell.[1] The internal endothelia, on the

Fig. 1.



Frog. Internal Endothelia: Silver-tinted. Hartnack System, No. 10.

---

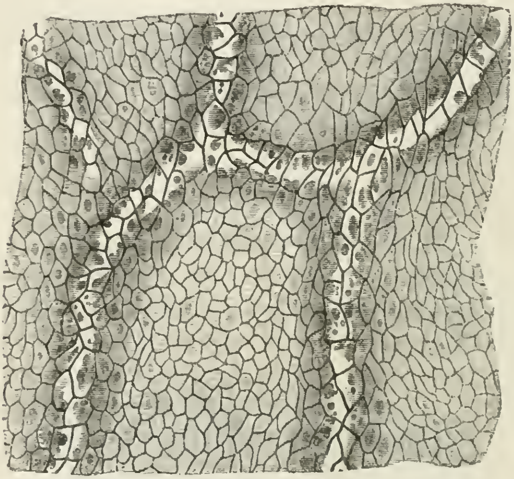
[1] The character of the outer endothelia is so like that given in the general description of peritoneal endothelia, that a representation of it was not considered necessary.

other hand, are of an almost uniform size and shape, while in general each cell has but one large nucleus.

The second peculiarity noted with regard to the endothelia was the following.

In not only the silver-injected but also in the silver-immersed pericardia of both the frog and toad, the endothelia of the external surface present a peculiarity which, examined by Hartnack system No. 4, may be described as dark-brown, irregularly-circular or curvilinear paths upon a light brown field, composed of deeply-tinted endothelial cells.

Fig. 2.



Frog. External Endothelia: Silver-tinted. Hartnack, No. 7.

In examining the connective-tissue lying immediately beneath, capillary vessels were found, following precisely the windings of the paths, like delicate sewerage pipes beneath a street, sometimes very near, sometimes at some distance from the surface, and varying in size in proportion to the depth of the tint.

The internal endothelia were of an uniform light-brown colour. Upon searching the tissue in its entire thickness, the vessels appeared to lie nearer the external than the internal surface.

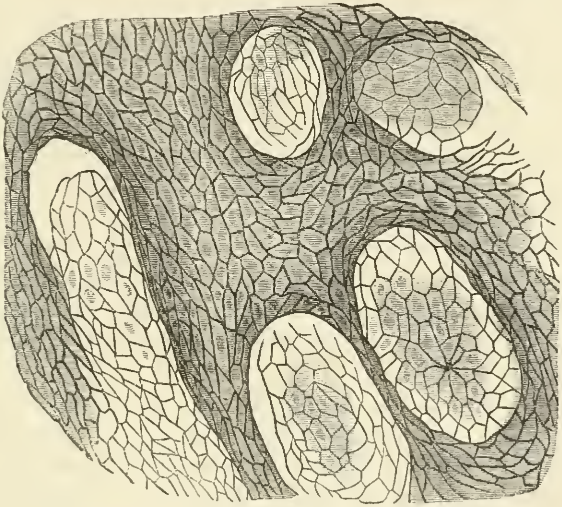
A portion of the pericardium was therefore split in two, the resulting sections appearing to be of equal thickness, in the internal of which few vessels were to be seen, while in the external the number was very large.

It was therefore supposed that a certain proximity of the vessel to the surface was necessary to produce this darker colouring.

It may be mentioned as a corollary, that in general young and active cells tint better in gold and silver solutions. It is therefore reasonable to suppose that also in this case the darker-coloured cells are the more active parts of the endothelia; a supposition which, beyond this, is supported by an earlier discovery of Stricker, that, in the inflamed tissues, the energy of multiplication and division of cells is far superior in the tissues close to the vessels to that of cells at some distance from them. It has previously been mentioned that the silver-*immersed* pericardia were likewise coloured in this manner. As the vessels during the tinting process enjoy no longer their functions, we must look elsewhere for the cause of a corresponding appearance; and we find it in the greater activity of absorption of silver of some cells over others, and these cells therefore become the witnesses of the past life of the vessels.

The next observation made on the endothelia was this:—

Fig. 3.



Frog. External Endothelia: Silver-tinted. Hartnack, No. 7.[1]

In the plate given above, the following will be noticed: The dark paths vary in form and size from a small and delicate circle to a large oval; the endothelia within these boundaries vary somewhat, also, in form and size; in the centre they are small, and quite regularly four-sided; the size increases and the form becomes more irregular from the centre toward the periphery, where they have the form of the fully developed cells. In all cases it was not possible to discover the capillaries beneath the paths.

Under the large oval and some of the small circular paths were they to be distinguished; but the capillaries were so delicate and so near the surface as to be seen with the greatest difficulty, and in some cases, to be entirely marked by the dark surface-colouring.

---

[1] This plate is not a perfect representation of the original specimen. The endothelia upon the borders of the light spots should be much darker than the intervening endothelia.

It is however probable, since it is substantiated that the intensity of the tinting depends upon the proximity of a vessel, that wherever such deeper tinting can be recognized as circular or curvilinear, of a nearly uniform width, and united to other deeper tinted portions under which vessels are seen, a capillary vessel lies concealed beneath.

Under the above-mentioned supposition, that the darker tinted cells are of higher activity, the process of development may be in some connection with the arrangement of the dark spots, which are scattered over the field and composed of two or three cells of a darker shade than the general tint. At all events at a later stage, we are able to study what appears to be a process of development.

The smallest circles are composed of delicate, almost regularly four-sided, minute cells, uniformly deeply tinted; in the somewhat larger circles or ovals the cells are also larger, not so uniformly four-sided, and the central cells have lost to some extent, their deeper tint. Within still larger ovals, the cells are likewise larger, more irregular, and the deeper colouring has disappeared entirely from the central cells, and is confined to those forming the circumference of the oval. There are also larger areas (as in Fig. 2) circumscribed by the darkly tinted cells, but whose cells resemble the normal in size and shape.[1]

In support of the development of endothelia by division of old cells, may be mentioned Ludwig and Schweigger—Seidel, "*Arbeiten aus dér Physiologischen Anstalt zu Leipzig* vom Jahre, 1866," and E. Klein, "*Stricker's Handbuch*," 620.

The third observation on the endothelia was the following: Gold-coloured specimens displayed upon the external surfaces closely-arranged ciliæ, whose length appeared to be greater than the thickness of the cells, giving to the surface the appearance of an unbroken, wavy field of grain. They were not found upon the internal endothelia, but upon the external of both the frog and the toad.

*The changes which take place during inflammation.*—The method of producing inflammation of the pericardium was the following: With a pair of scissors, an opening one inch in length was made, parallel, but to the right of the sternum; by means of an hook the skin was so drawn to the left side as to discover the residence of the heart; the end of the sternum was now gently raised, a cut sufficiently large to allow of the introduction of a thin stick of nitrate of silver was made through the peritoneal fascia; the silver was applied as delicately and for as short a moment as possible to the pericardial sac; the parts were allowed to resume their natural positions, and the wound in the skin was sewed up. In the earliest of these studies the silver-stick was held in contact with the pericardium several seconds, but it was found that the inflammation following the operation was too severe to allow of the animal's living more than forty-eight hours. The post-mortem examination showed the pericardial sac to be enormously distended by lymph, containing granulations and pus-cells in large quantities; the endothelia of both surfaces had disappeared, their place being occupied by a thick layer of pus-cells, and the connective tissue was so infiltrated with pus as to be scarcely recognizable; the heart tissue had undergone a like change, and both the heart and its envelope were so disintegrated as to be easily broken to pieces. A physical examination of pericardia upon the fifth and sixth days of the less severe inflammatory process, gave the following results: The membrane was likewise greatly distended by lymph which contained but few granulations and pus-cells, was thick, opaque, of a spongy feel, and with pressure exuded infiltrated lymph. With slight force it could be split in two, and in one case an extensive hemorrhage had taken place within the tissue, completely dissecting it into halves. A microscopical examination of the surfaces thus laid bare (the specimen was colored in gold-solution and first cleansed of coagulated blood by means of a delicate India rubber dipped in glycerin) disclosed fine networks of nerves and vessels, lying immediately on the surface and connected to others, running through the tissue in its entire thickness and permeating it by similar networks in every direction.

---

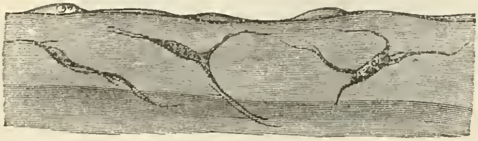
[1] The plate does not give a sufficiently extensive view for the observation of all these changes.

Connections by false membrane were found between the heart on the one side and the pleural fascia on the other, to the inflamed pericardium. The process had extended to the heart, with the results already known to take place in inflammation of the heart-substance..

We now turn to a description of the minute microscopical examinations.

The specimens used for these examinations were of from one to six days' inflammation. The drawings were taken from gold-coloured specimens from the pericardia of toads, because the endothelia of this membrane are somewhat larger in the toad than in the frog; and, although the inflammatory changes are similar, in the former the specimens for drawings are better. The first change which was noticed is this: All cell elements of the tissue become, as it were, hypertrophied; the endothelia and their nuclei retain their contours but grow in area and thickness; the connective-tissue cells

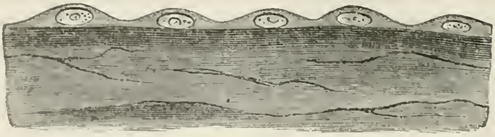
Fig. 4.



Toad. Profile view of Normal Endothelia: in folded specimen: Gold-tinted: Hartnack, No. 10.

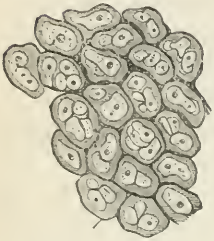
enlarge; the vessels and nerves are more readily found than in the normal tissue; and the ciliæ upon the outer endothelia have increased in length and calibre. Upon the second day the changes are more marked: the endothelia of either surface begin to develop each in its own particular manner toward the formation of new membrane, as will be seen at a more highly developed stage; the nuclei of the outer endothelia split up, while the cells show also the tendency to divide; the nuclei of the internal endothelia proliferate by a more uniform division, enlarge and separate from one another; at the same time the cells have been changing their forms, by amœboid movements, so that every variety of cell may be seen at once.

Fig. 5.



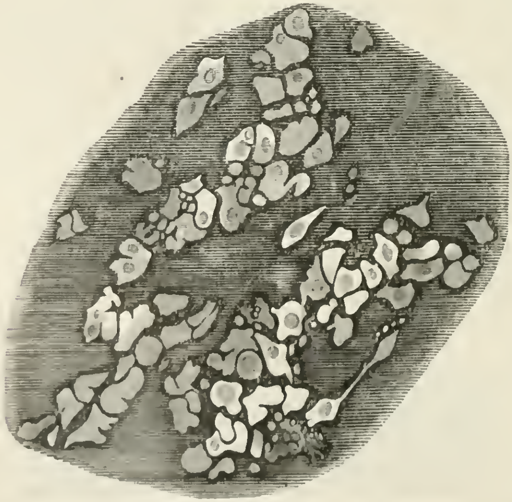
Toad. Profile view of Endothelia 24 hours inflamed: in folded specimen: Gold-tinted: Hartnack, No. 10.

Fig. 6.



Toad. 2 days inflamed outer endothelia: Gold-tinted: Hartnack, No. 10.

Fig. 7.

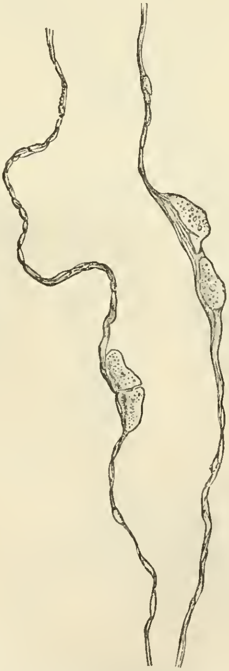


Frog. Silver-tinted: 2 days inflamed: Internal Endothelia: Hartnack, No. 7.

The connective-tissue cells elongate and their nuclei divide. The investigations do not prove the growth of new vessels and nerves; but that those existing are so far influenced by the activity of the other elements of the tissue as to increase in size, is proved by the fact that, while in the normal pericardium they must be searched for, in the inflamed every turn of the fine adjuster discloses intricate networks. These transformations proceeded regularly from the second day, so that upon the sixth day the following observations were made.

Through the ground-substance, which was multiplied to many times its normal thickness, were scattered free cells of different shapes, resembling pus, the transformed nuclei of connective-tissue cells, and stellate and elongate cells. Here and there were found slight hemorrhages and granulations. As to the nerves, the appearances were strongly though indirectly in support of the belief that a new growth was taking place; for, first, their visibleness had become much more noticeable than in the specimens of two days' inflammation previously described; and secondly, the nerves no longer retained their gradually curving lines, but were bent in innumerable angles, as if they had increased in length but were not permitted by the adjoining tissues to extend themselves; and thirdly, the enlargements which are seen from place to place upon the normal nerves, were no longer oval in shape and of a diameter not greater than twice

Fig. 8.

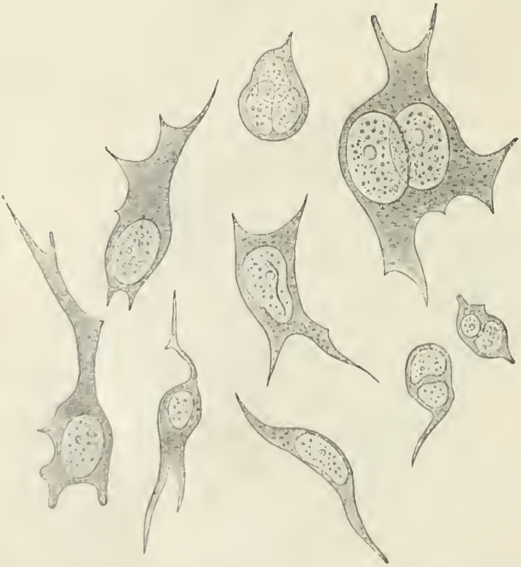


Gold-tinted: 6 days inflamed: nerves: Hartnack, No. 10.

the diameter of the nerve cylinder, but were observed to protrude hernia-like, sometimes on one, sometimes on both sides, of a diameter many times that of the normal bulbs, and from the larger of these could be traced delicate filaments whose terminations lost themselves in the connective tissue adjoining. The connective-tissue cells which likewise took on this peculiar filamentous growth seemed to be in connection with the nerve processes just described, although it could not be established beyond a doubt; and fourthly, the nucleated enlargements of the nerves which in the normal condition are quite small and single, were much enlarged and the nuclei were, in some cases, undergoing the process of division, and in others, already divided into two or more parts; and lastly, in juxtaposition with the under surfaces of the transformed endothelia were numerous networks of exceedingly fine, almost straight nerve fibres.

The bloodvessels were not sufficiently studied to warrant a description. The most interesting changes had taken place upon the two principal surfaces. I have previously mentioned that the inflamed membrane was much thickened; and that this was due to the increase of the connective-tissue cells, to the enlargement if not formation of nerves and vessels, and to the infiltrated lymph; but the endothelia aid also, although to a much less degree, in producing this thickness; for upon each surface were found several planes of cells. The process, beginning on the second

Fig. 9.

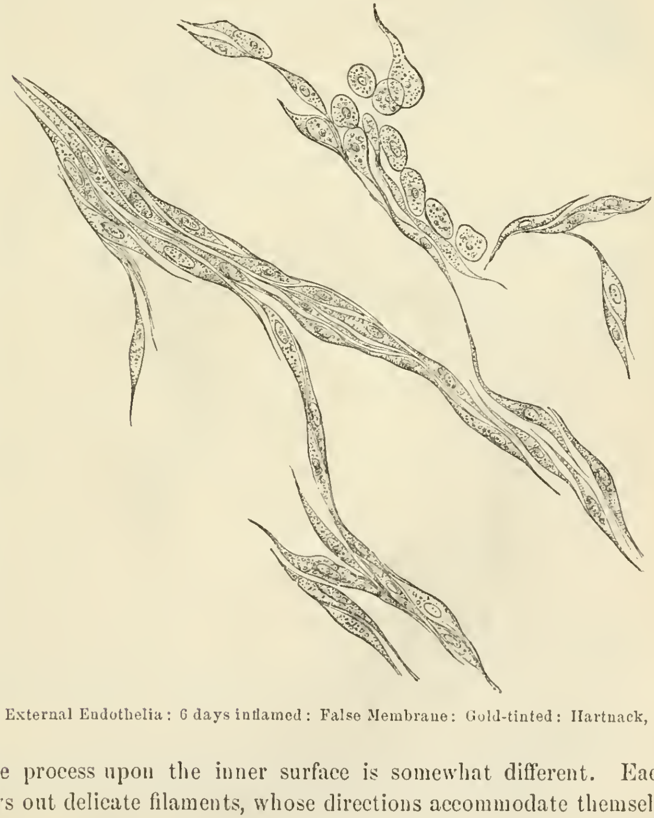


Toad. Internal Endothelia, 6 days inflamed: various forms and sizes of cells: Gold-tinted: Hartnack, No. 10.

day, has continued in the following manner. Upon the outer surface, the endothelia, which we have seen splitting up and their nuclei dividing, possess no longer their normal outlines, but are transformed into elongate or spindle-shaped cells. Upon the inner surface, the change is even more marked. The amœboid-like endothelia of two days' inflammation have divided into innumerable cells of extremely various forms; namely, round or oval, stellate or elongate, spindle- or bulbous-shaped cells; and of very different sizes, varying from the size of pus-cells to cells several times the size of normal internal endothelia. Their nuclei are round or oval, but vary likewise in size, occupying sometimes a small portion, at others the greater part of the cells.

The more advanced stage of the process is this. The spindle-shaped cells of the external surface unite with one another, arrange themselves in rows, and form thus a compact new membrane.

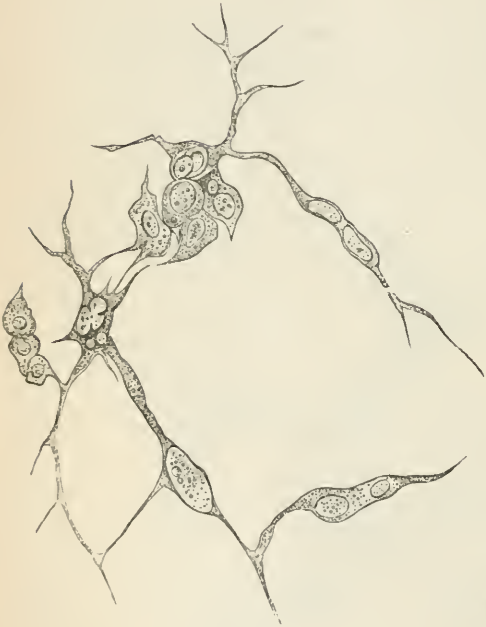
Fig. 10.



Toad. External Endothelia: 6 days inflamed: False Membrane: Gold-tinted: Hartnack, No. 10.

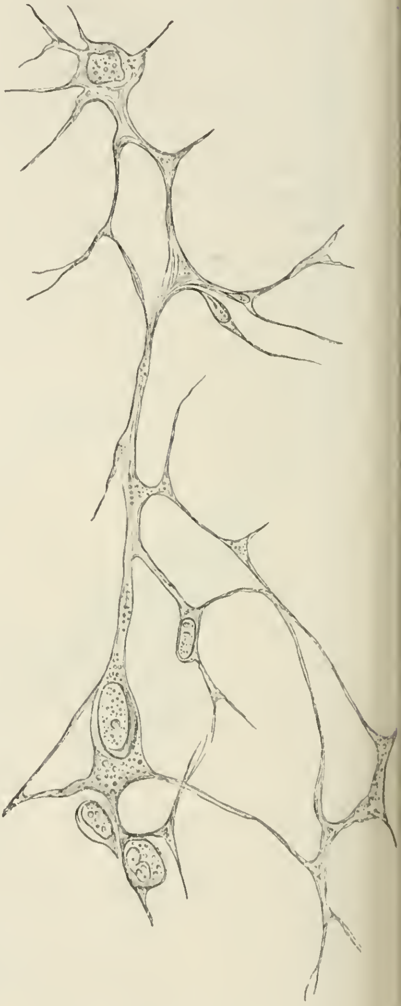
The process upon the inner surface is somewhat different. Each cell throws out delicate filaments, whose directions accommodate themselves to the situation of the cells so as to unite with like filaments from neighbouring cells and thus to form a new network of fibres and a new connective tissue.

Fig. 11.



Toad. Internal Endothelia: 6 days Inflamed: False Membrane: Gold-tinted: Hartnack, No. 10.

Fig. 12.



The same: later stage.

The results of the investigations upon the inflamed pericardium are in short the following:—

1st. All cell elements of a tissue, during inflammation, multiply.

2d. New formation takes place, first, of cells; second, of connective tissue (false membrane); and, third, most probably of nerves.

## ART. II.—*On Thrombosis and Embolism.* By JOHN A. LIDELL, M.D., of New York.

THE blood oftentimes spontaneously coagulates in the vessels during life; the coagula thus formed are called thrombi, and the process which forms them thrombosis. The term thrombosis then signifies, that some part of the vascular system is obstructed (more or less completely) with blood-clot, or with some morbid product derived from blood-clot, which has been spontaneously developed at the place of obstruction. The word thrombus represents the obstacle itself, and thrombosis the process by which the obstacle, *i. e.* the coagulum, is originally formed, and through which it may afterwards, according to circumstances, be removed (absorbed), or become inert (organized), or be destroyed (disintegrated).

One variety of thrombosis, namely, that which occurs in the peripheral veins, is synonymous with the disorder which was called phlebitis by John Hunter, Cruveilhier, Carswell, Hasse, and by pathologists generally twenty years ago. They supposed it to be inflammatory in its nature, and that the coagulation of the blood directly resulted from inflammation of the lining membrane of the affected veins. According to their views, the term phlebitis was appropriately applied to this affection. But clinical experience and post-mortem research have now shown that their hypothesis is untenable. On this point Virchow justly remarks: "We do not know that inflammation, as such, has any necessary connection with coagula; on the contrary, it has turned out that the doctrine of stasis rests upon manifold misinterpretations. Inflammation may unquestionably exist when the current of blood within the vessel of the affected part is perfectly free and unobstructed. If we therefore leave inflammation on one side, and confine our attention simply to the coagulation of the blood, to the formation of the clot (thrombus), it seems most convenient to comprehend the whole of this process under the term *thrombosis.* I have [says Virchow] proposed to substitute this term for the different names phlebitis, arteritis, etc., inasmuch as the affection essentially consists in a real coagulation of the blood [during life] at a certain fixed point." (*Lectures on Cellular Pathology,* pp. 232, 233, Am. ed.) Clinical experience and post-mortem research have abundantly shown that the disorder which was formerly thought to essentially consist in an inflammation of the vein-wall (phlebitis) is in reality not inflammatory in its nature, and therefore we find that the term false phlebitis is now sometimes applied to cases of thrombosis. It appears now to be pretty generally admitted, 1st, that thrombosis has no necessary connection with the vascular inflammations, or, rather, that, in at least a very large proportion of the cases where it occurs, there is no corresponding inflammation of the vessel affected by it; 2d, that it may occur in any part of the circulatory apparatus—in the veins, in the arteries, and in the heart itself; and, 3d, that it occurs with very much greater frequency in the veins than in the arteries.

*Embolism*, however, must not be confounded with thrombosis. It signifies that some bloodvessel is obstructed by an embolus or plug, which has been brought in the blood-stream from some more or less distant point where its formation occurred. Embolism bears a slight resemblance to thrombosis in one respect, namely, in it also the calibre of the affected vessel is obstructed, and more or less completely stopped up, but they do not agree in any other particular. For example, in thrombosis the occluding coagulum is always formed from the blood at the seat of obstruction; in embolism the occluding plug is carried, in the blood already formed, to the place of obstruction, usually from some considerable distance. Thrombosis occurs for the most part in the veins; embolism in the arteries. In embolism the plug often consists not of blood-clot, but of a so-called vegetation or concretion of fibrin which has been washed off from the valves of the heart, or from the endocardium, and carried forward by the arterial current until the vessels become too small in calibre to allow it to advance any further, as was first shown by Virchow in Germany, and by the late Dr. Kirkes in England; or, the embolus may consist of a fragment of a cardiac valve, or of the endocardium, which becomes detached when these parts are the seat of ulcerative inflammation, as was also first shown by the late Dr. Kirkes. Again, embolism of the main artery not unfrequently occasions gangrene in the extremities; thrombosis of the corresponding vein almost never leads to such a result. Embolism of the internal carotid artery, and its branches, often causes softening of the brain; thrombosis of the internal jugular vein and its tributaries never produces this lesion.[1]

Embolia, however, not unfrequently have their origin also in the softening, breaking down, and detachment of venous thrombi. This circumstance was originally pointed out by Virchow, and its occurrence constitutes the only real bond which exists between primary thrombosis and embolism. A thrombus often constitutes the source from which many embolia simultaneously spring, but in order to perform this office it must first break into numerous pieces which become separated from each other, or detached, and then float away in the current of the circulating blood. Thus, thrombosis occurring in the peripheral veins not unfrequently leads to embolism of the pulmonary artery and its branches. But thrombosis constitutes only one of several sources from which embolia are known to proceed, and, even in the cases where thrombosis is followed by embolism, the first-named process usually ends where the latter begins. Embolism may, however, induce a *secondary thrombus* to form at and beyond the place where the embolus lodges, in the blood which stagnates there, as will be more fully shown in the sequel; but this proceeding is quite distinct from the formation of an original coagulum, or what may with propriety be called a primary thrombosis.

---

[1] But thrombosis of the cerebral arteries sometimes occasions cerebral softening, and thrombosis of the femoral artery sometimes produces gangrene of the foot and leg. These exceptions to the general statement presented in the text will, however, be duly noticed when we come to speak on cerebral thrombosis, and on arterial thrombosis of the extremities.

Virchow's proposition to employ the term thrombosis instead of phlebitis, in all cases where the blood spontaneously coagulates in the veins during life, has proved acceptable to pathologists throughout the world. The term phlebitis is now but seldom used, as compared with twenty years ago, and its employment has become restricted to the cases in which the vein-walls are positively the seat of an inflammatory process, and not simply stained by contact with decomposing blood. So far as the spontaneous formation of coagula in the peripheral veins, in the pulmonary artery, and in the heart itself, during life, is concerned, thrombosis is usually employed to designate the disorder generally, and the term phlebitis, when used in connection with it, is considered to be applicable only to a comparatively rare variety or species of peripheral thrombosis, in which the walls of the affected veins are found to be really inflamed, and in which the inflammatory process may possibly sustain a relation to the blood-clots of cause and effect. The writer infers from his own experience, as well as from the observations of others, that the number of cases in which thrombosis is associated with primary or pre-existing inflammation of the obstructed vessels is relatively very small. He needs here only to mention how frequently thrombosis of the heart and pulmonary artery occurs in the last stage of many exhausting disorders, and how very seldom it is accompanied by inflammation of the membrane which lines these organs. The term *primary* inflammation is employed above, because it is not improbable that a *secondary* inflammation may, under favourable circumstances, be kindled in the wells of a thrombosed vein, just as we sometimes see the connective tissue become inflamed and suppurate around blood-clots in other parts of the body, especially in unhealthy subjects. In such cases the thrombosis is obviously the primary, and the phlebitis the secondary, or induced disorder. A case will be related in which secondary phlebitis occurred.

For convenience of description and reference the *Varieties of Thrombosis* may be arranged in several groups or classes. Thus we have *three distinct groups:—*

1. That which occurs in the veins, or *venous* thrombosis;
2. That which occurs in the arteries, or *arterial* thrombosis;
3. That which occurs in the heart, or *cardiac* thrombosis.

Again, but two groups are sometimes used for classifying the cases of thrombosis. The first embraces those in which the heart itself, or the great vessels connected with the heart, are obstructed with ante-mortem coagula, and is called *central* thrombosis; the second embraces those in which the peripheral veins or the peripheral arteries are obstructed during life with blood-clots developed at the place of obstruction, and is called *peripheral* thrombosis. We shall substantially adopt this classification in the following pages.

Finally, this disorder is called *cerebral* thrombosis when it involves the bloodvessels of the brain or its membranes, *pulmonary* thrombosis when it affects the bloodvessels of the lungs, *portal* thrombosis when it attacks the portal vein, *renal* thrombosis when it involves the bloodvessels of the kidneys, and *crural* thrombosis when it affects the bloodvessels of the thigh, etc.

But thrombosis, notwithstanding the number of its varieties, is a disorder which possesses very great importance for the practising physician, as well as for the medical philosopher; because it embraces almost all the cases which used to be described under the head of phlebitis, together with a very large share of the accidents which occur to women after childbirth, and a considerable proportion of the cases in general in which death suddenly occurs;[1] besides, it is by producing thrombosis of the heart and pulmonary artery that chronic diseases, such as tuberculosis, carcinoma, chronic diarrhœa, and other disorders which are attended with much marasmus, finally occasion death, in very many instances. It is also probable that both thrombosis and embolism play a much more important part in the history of disease than is generally supposed, and that they are destined to receive much more attention from the pathologist in the near future than is generally believed. This subject, therefore, demands from us careful study and profound attention.

1. *Central Thrombosis.*—The spontaneous formation of coagula in the right chambers of the heart and in the pulmonary artery not unfrequently leads to sudden death. The following case affords a striking example:—

CASE I. *Death suddenly produced by thrombosis of the heart and embolism of the pulmonary artery; autopsy.*—S. W., aged 24, a married woman much addicted to drink, who had been separated from her husband for the last five months on account of their intemperate habits, as it was said, died suddenly on Saturday, Nov. 20, at 2 o'clock in the morning. On the previous Wednesday she came to the city from the country, whither she had gone some days before in order to live at service. On the evening of Thursday, the 18th, she came home, saying that she had taken laudanum

[1] In 580 cases of sudden death Ogston found that thrombosis of the heart and large vessels connected with it was present in 63, or 10.8 per cent. of them, although the thrombosis constituted the cause of death in only 14 instances. (Vide *Ogston on Sudden Death*, in *British and Foreign Med. Chirug. Review*, vol. xliv., 1869, p. 475.)

In cases where death does not occur suddenly, however, thrombosis of the heart and great vessels attached to that organ constitutes an extremely frequent mode of departing from this world.

(six cents' worth) for the purpose of killing herself; but her friends supposed her to be jesting, as she was much the worse for liquor at the time. Soon afterwards she sank into a deep sleep, from which, however, she awakened of her own accord about midnight, and had an attack of vomiting. This sleep was, doubtless, produced not by the opium, but by the drink which she had taken. During the next day, Friday, the 19th, she seemed to be very sick, and vomited a good deal, complaining also of thirst and pain in the stomach. About 1 o'clock that night she had an attack of epileptiform convulsions, after which she recovered her senses again, and asked for drink (water). It was given to her, and then she was suddenly seized with great difficulty of breathing. She rapidly grew worse, and died at 2 o'clock, as stated above, of apnœa.

*Autopsy by the author, for the coroner, thirty-three hours after death.*—Decomposition has commenced. Adipose tissue abundant beneath the skin and in the omentum. Right pleural cavity glued up by old adhesions. Right lung strongly congested and œdematous. Left lung intensely congested. Left pulmonary artery obstructed with coagula. Heart enlarged, fatty externally, flabby, and its apex rounded off; its cavities are dilated, and those of the right side are filled with dark-coloured clotted blood. Foramen ovale closed. Liver enlarged, its edges being blunt or rounded off; its whole surface, both superior and inferior, is covered with dense swathes of old false membrane by means of which it adheres or is bound to the adjacent organs and parts; the surface of an hepatic section, however, presents a normal appearance. Transverse colon bound to anterior wall of abdomen by old adhesions. Stomach large; it contains three or four ounces of liquid having a dark-greenish colour; its mucous membrane is mamillated and softened, but pale in colour. Spleen natural. Left kidney congested. Did not examine the right one. Pupils dilated. Did not open the head. The examination was necessarily hurried and curtailed from want of time.

*Comments.*—This woman, while recovering from a debauch, was suddenly attacked with dyspnœa. It rapidly increased in severity, and in about half an hour she died, this being the only symptom of importance that was observed in connection with the fatal issue. At the autopsy the right chambers of her heart were found to be full of dark-coloured blood-clot, the pulmonary artery extensively obstructed with dark-coloured coagula, and the pulmonary tissue intensely congested. It is probable that thrombi were formed in the right side of the heart, especially in the right auricle, during the temporary stasis of blood in this side of her heart which attended the epileptiform convulsions. It is also probable that some of these coagula became detached when she rose up in bed to take the drink of water, and, floating away in the blood-stream into the pulmonary artery, quickly obstructed the branches of that vessel to great extent. Dyspnœa then suddenly occurred, because the flow of blood into the pulmonary capillaries was suddenly arrested in great measure, and the function of the lungs was suddenly suspended to corresponding extent. Thus the difficulty of breathing, together with the fatal issue, clearly appears to have been due to embolism of the pulmonary artery, and the embolism itself to have resulted from thrombosis of the heart.

The congested condition of the lungs was also produced by the embolism of the pulmonary artery. The blood stagnated in the pulmonary vessels beyond the occluding clots, and thus a more or less complete state of pulmonary infarction was produced to corresponding extent. For, as Ludwig has shown, we must not infer when the calibre of an artery is incompletely obstructed or constricted that "the contents of its capillaries are lessened, and that the parts which they traverse grow paler. The sluggishness of the stream thus produced in the capillaries rather has the effect of allowing the heavy blood-corpuscles to collect and become crowded together; now, as two or more blood-corpuscles, if brought into contact, are apt to become permanently adherent, the blood itself can form a plug capable of closing the capillaries. Such an occurrence, which converts the capillaries into blind appendices to the artery, must cause an increase in the internal pressure" with dilatation of their calibre and a state of hyperæmia, attended not unfrequently with rupture of their walls and extravasation of blood.

Again, Trousseau, while speaking of rheumatic apoplexy, says:—

"A coagulum may form in the cardiac veins, in the right heart, or the pulmonary artery, as a result of that remarkable tendency to spontaneous coagulation which the blood evinces in rheumatism, and this thrombosis will bring on asphyxia, which will carry off the patient rapidly, if not suddenly, in a state of stupour which may be erroneously regarded as cerebral." (Vide *Trousseau's Lectures on Clinical Medicine*, vol. i. p. 522. *New Sydenham Soc. Trans.*)

Hasse mentions a case which probably belongs to this category.

The victim was a robust youth at the Leipsic Hospital, who, after taking severe cold, became seized with wandering pains and with a fixed and deep-seated pain in the sacral region. Violent dyspnœa ensued, and he died very shortly afterwards. On dissection, nothing was discovered except inflammation (thrombosis) of both hypogastric veins, which were blocked up with solid, adherent, and stratiform fibrinous plugs; *similar formations were found in the branches of the pulmonary artery* of the right side. (Vide *Hasse's Pathological Anatomy*, pp. 39, 40, note, American ed., 1846.)

Dr. Druitt has recorded another case belonging to this category.

The patient, a male, aged 42, had had symptoms of subacute rheumatism, with some œdema latterly of both hands and feet. The usual obstruction symptoms supervened suddenly. At the autopsy a venous clot or cast, twenty inches long, was found in the right auricle and ventricle of the heart. It was tubular, firm, pale, and lay coiled up and partly surrounded with soft fresh fibrin. The right and left pulmonary artery and their leading branches also contained soft, loose fibrinous plugs. (Vide *New Sydenham Soc. Year-Book*, 1862, p. 116; also *Med. Times and Gaz.*, July 19, 1862.)

Dr. Playfair has also reported a case in which thrombosis of the right heart and pulmonary artery, with sudden death, occurred in a subject who was thought to be rheumatic.

A girl, aged 19, apparently healthy, employed as a nurse at King's College Hospital, on March 15, complained of rheumatic pain in her right knee-joint, which was, however, neither swollen nor tender on pressure, and there was no general feverishness. No other joint was affected. An alkaline mixture was prescribed, and she was recommended to remain in bed to give rest to the joint. On the next day she was not seen, but the nurses who slept in the same room reported that she had been cheerful and well all day, and had scarcely complained of pain. On the following morning, the third from the first appearance of the pain, she awoke about six o'clock, and entered into conversation with her companions, saying that she had passed a good night and was free from pain. Shortly after this she complained of feeling weak, and asked for the bed-pan to be given to her that she might pass water without getting out of bed. This was done, and immediately afterwards her rapid and hurried breathing attracted attention. The house-physician was at once sent for, but before he arrived she was dead.

"On post-mortem examination all the organs and structures of the body were found to be healthy. There were no clots in any of the peripheral veins. In the right side of the heart, and in both pulmonary arteries, there was a firm, solid clot of decolourized fibrine, of a pale yellow colour, which was adherent to the valves and fleshy columns of the heart, but not to the walls of the arteries themselves. This coagulum extended into the smaller, but not into the most minute ramifications of the arteries." Dr. Playfair remarks: "It seems to me probable that in this instance the coagulatum had [been] formed for a considerable period before death; probably it had been forming during the night preceding the fatal result. As long as the patient remained quiet sufficient blood passed through the obstructed vessels to carry on the animal functions, and no discomfort was felt. When, however, she was obliged to exert herself, there was a sudden call for blood, which could not be supplied through the occluded arteries, and the fatal result took place." (Vide *Trans. Patholog. Soc. London*, vol. xviii., 1867, pp. 68–70.)

Roget (*Gaz. des Hôp.*, 1869, 220) gives the history of a healthy little girl, aged 5, who suffered from acute rheumatic fever, without heart affection, but who died in the second of two attacks of severe dyspnœa occurring in one day; the only thing found to account for death was a very large, hard, fibrinous, recent clot, which filled up the right auricle and ventricle of the heart, and stopped up the orifice of the pulmonary artery. Another, but smaller, clot was contained in the left chambers of the heart. (Vide *New Sydenham Soc. Retrospect*, 1869–70, p. 98.)

The so-called metastasis of gout and rheumatism to the heart, in the writer's opinion, consists sometimes (and perhaps not unfrequently) in the occurrence of cardiac and pulmonary or central thrombosis. It is in such cases, probably, that the practice of drinking deeply in order to protect the heart from gout, as recommended by country squires of the old school, has sometimes seemed to prove useful.

Puerperal women are especially prone to the occurrence of thrombosis in the right side of the heart and pulmonary artery. When this accident happens, the patient is suddenly seized with faintness, irregular action of the heart, difficult breathing, rapidly increasing collapse; and death usually soon ensues. Not unfrequently the patient complains only of sudden dizziness and faintness, gasps for breath, and quickly dies. On making an autopsy, the right chambers of the heart and the pulmonary artery are found to be obstructed with ante-mortem clots. Dr. Barnes has collected fourteen fatal cases. (Vide *Obstetrical Transactions*, vol. iv. pp. 44–47.) To these Dr. Playfair has added eleven others. (Vide *Transact. Patholog. Soc. of London*, vol. xviii., 1867, pp. 71–73.) Thus we have in all twenty-five fatal cases of central thrombosis occurring in puerperal women, in which accurate post-mortem examinations were made.

On analyzing these cases we find that the occluding clots may be divided into two classes, namely : 1st. *genuine thrombi*, or those which were formed on the spot by spontaneous coagulation of the blood ; and 2d, *embolia*, or those which were originally formed in the peripheral veins and migrated from thence to the heart or pulmonary artery, where they generally induced a secondary thrombosis. Dr. Playfair says :—

> "In seven out of these twenty-five cases there was clear evidence of true embolism, and in them the death occurred at a remote period after delivery; in none of them before the nineteenth day. This contrasts remarkably with the cases in which the post-mortem signs showed that no true embolism could have occurred. These amounted to fifteen out of the twenty-five, and in all of them, with but one exception, the death occurred before the fourteenth day; often on the second or third. The reason seems to be that in both classes of cases the coagulation of the blood was caused by a similar blood dyscrasia, due to the puerperal state. In true embolism, however, the dyscrasia first caused coagulation in the peripheral veins, and it was not until changes had taken place in the clots so formed, generally in the way of fatty degeneration, that portions of them became separated and carried to the pulmonary arteries, there to cause the fatal obstruction. In primary thrombosis of the pulmonary arteries, however, the same altered condition of the blood which induced clotting in the peripheral veins in the former class of cases here caused it first in the pulmonary arteries, so that death ensued at a much earlier period after delivery, and at a time corresponding to the peripheral thrombosis in cases of true embolism." (p. 70.)

But recovery sometimes takes place, even when the pulmonary artery is seriously obstructed with coagula. Dr. Playfair relates three cases, occurring under his own observation, which do not seem explicable on any other hypothesis.

Dr. Playfair's investigations have led him to adopt the following conclusions :—

> "1. Obstruction of the pulmonary artery after delivery may depend either on embolism or on spontaneous thrombosis.
>
> "2. The former usually occurs at a much later period after delivery than the latter ; and spontaneous thrombosis probably corresponds with, and is due to some cause similar in its nature to, that which produces the obstruction of the peripheral veins in true cases of embolism.
>
> "3. Both thrombosis and embolism are much more common in patients who are anæmic and weak, either from hemorrhage or other cause.
>
> "4. It is probable that obstruction of the pulmonary artery sometimes occurs without proving fatal.
>
> "5. The main element in the treatment of such cases is the most rigid rest, and a nourishing supporting regimen.
>
> "6. As far as present statistics go, thrombosis and embolism seem more common in primiparæ than in multiparæ." (Vide *Braithwaite's Retrospect*, part lvi. 1868, pp. 234–238 ; also *Lancet*, July 27 and Aug. 10, 1867, pp. 94, 153.)

One of Dr. Playfair's cases of central thrombosis, which ended in recovery, presented the following symptoms:—

"Thirty hours after delivery the patient complained of great weakness. On the third day a sudden fright was followed by syncope, then by intense dyspnœa; pulse very feeble, respiration 40, lungs clear. Immediately over the site of the pulmonary artery was a distinct, harsh, rasping murmur, confined to a very limited space. Heart-sounds feeble and tumultuous. The existence of coagulum in the right heart was clear. Dr. Playfair thinks that the possibility of such a condition existing without proving fatal had not previously been suggested." (Vide *New Sydenham Soc. Retrospect*, 1867–8, pp. 415, 416.)

Dr. Playfair has also related a very interesting case of embolism and secondary thrombosis of the pulmonary artery in the *British Medical Journal* for 1869.

J. W., aged twenty-one, six months pregnant, was operated upon for fissure of the rectum on the 5th of December. On the 13th the pulse and temperature rose, and the respiration increased to 40. Labour-pains set in, and the child was expelled next day. "Extreme dyspnœa, countenance excessively pale, face expressing extreme anxiety. No pulse at wrist, nor at the posterior tibial artery. Sounds of heart almost *nil*." She called incessantly for air, and said she was being suffocated. She died at 7.45 A.M. and during the last few seconds her face was convulsed. *Autopsy:* Lungs quite healthy; heart healthy, its right side extremely distended, also the large veins of the neck and the two cavæ; left ventricle small, pulmonary veins nearly empty. At the bifurcation of the pulmonary artery plugs of firm fibrin were found obstructing the passage of the blood. In the centre of these plugs was a piece of fibrin the size of an almond, at the base of which was an irregular surface that fitted closely to a corresponding rough surface in a clot of the iliac vein. This was the origin of the embolus. (Vide *New Sydenham Soc. Retrospect*, 1869–70, pp. 395–396.)

In this case the lodgement of an embolus in the pulmonary artery appears to have been attended with the formation of coagula by which it was enveloped—that is, a secondary thrombosis was induced.

For the purpose of illustrating still further the subject of embolism of the pulmonary artery we will present the following observation from Niemeyer. He says:—

"Within the last two years I have seen two cases in which death occurred in a few hours, with all the signs of extreme dyspnœa and collapse, and in which it was found post-mortem that a large thrombus had been detached from the femoral vein, had passed into the circulation, and, by obstructing the main branch of the pulmonary artery, had occasioned this peculiar kind of suffocation." (Vide *Text-Book of Practical Medicine*, vol. i. p. 412, first Am. ed.)

Prof. Malmsten, of Stockholm, related to the Society of Swedish Physicians, 1867 (*Journ. f. Kinderk.*, 1869), a case of sudden death during pleurisy from thrombosis of the pulmonary artery.

Apparently recovering from pleurisy, the patient went out, and on coming in was suddenly seized with great dyspnœa and severe palpitation. Respiration exceeded 40 in the minute; the heart-beat was so strong that the chest-wall was shaken by it. On auscultation there was heard over the right lung a clear but very strong respiration rush; over the left lung it was blowing. The patient became paler, the face and lips assumed a livid colour, a cold sweat broke out over the forehead, and in ten minutes death followed. The patient was conscious to the last moment. *Autopsy:* The veins of the dura and pia mater were very full. On opening the chest the right lung collapsed normally. There were recent adhesions of the left lung below, and about two pounds of serum in the pleura compressed the upper part. No blood in the heart, the right side contracted and containing no trace of fibrin or coagulum. The heart was of normal size and structure. At the origin of the right pulmonary artery was a coagulum which quite filled the vessel; it was dark-coloured, and stretched into all the principal branches. There were no thrombi in the left pulmonary artery. (Vide *New Syd. Soc. Retrospect*, 1867–8, p. 432.)

CASE II. *Membranous croup occurring in a child of four years and six months; sudden death due in all probability to thrombosis of the right side of the heart and embolism of the pulmonary artery; no autopsy.*—H. M. H., a healthy-looking little girl, aged 4½ years, had a mild attack of scarlatina in December, 1870, and January, 1871, but made a good recovery.

On the afternoon of February 28, I was again brought to see her in great haste, and found that she had membranous croup. She had already been ill some four or five days, and the nature of her case was unmistakable. The singular cough and voice, "vox instar cantus galli," and the laryngeal breathing, which characterize this disease, were all present in a high degree. Besides, some false membrane could be perceived on looking into her throat. The dyspnœa which resulted from the obstruction of her larynx was excessive, by spells, and threatened immediate suffocation. Her skin was warmer than natural, and her pulse strong.

Before resorting to tracheotomy I resolved to test the solvent power of lime-water on the false membrane, and, accordingly, began this treatment as soon as I could bring an atomizing apparatus from home, which was about a half mile distant. The lime-water was applied to the fauces, larynx, etc., in the form of spray with one of Codman and Shurtleff's instruments (No. 5) for six or eight minutes at a time, and at intervals of every half hour or hour till late that night. Its use was attended with much relief to the symptoms; and the little patient slept naturally during the latter part of the night.

*March* 1, 8 A. M. The croupal symptoms returned and the lime-water spray was again resorted to. Its administration was continued through the day at intervals of every hour or two, and the disease in her larynx and trachea clearly seemed to be yielding to this treatment. The voice and cough-sounds decidedly improved, the latter became moist or loose, and the dyspnœa grew gradually less urgent through the day, and before nightfall disappeared. At 6 o'clock P. M., when I went to dinner, her breathing was quite easy or natural, and I began to entertain some hopes of her recovery.

At 7 o'clock P. M., when I returned, I found, however, that a great change for the worse had occurred. She again had very urgent dyspnœa, but it was of an entirely new character. There were no abnormal sounds now issuing from her throat, nor any other evidences of obstruction in her larynx. Still the little patient was striving with all her might to draw air into her lungs. Even the muscles which are only indirectly concerned in performing the respiratory movements, such for example, as those of the neck, arms, abdomen, etc., were brought into full play. Her face was congested, her lips blue, her eyes widely open, her nostrils expanded and working strongly, her skin bedewed with sweat, her pulse frequent and small. Her heart was beating in a tumultuous manner, and its sounds appeared indistinct, but I could not detect anything else abnormal. The respiratory murmurs were rather louder than natural, but otherwise unaltered and heard all over the chest. The larynx was so free from obstruction at this time that the attendants and friends of the little patient at once remarked that the difficulty was no longer seated in her throat. Moreover, this new and terrible form of dyspnœa had come on suddenly while I was away at dinner, as mentioned above. *Diagnosis:* this fresh attack of dyspnœa was not due to obstruction of the larynx, trachea, and bronchia, nor to condensation of the pulmonary substance, nor to effusion in the pleural cavities, and we therefore inferred that it was occasioned by a want of blood in the pulmonary capillaries, or, in other words, that it resulted from some obstruction to the flow of blood from the right side of the heart through the pulmonary artery and its branches to the lungs. We thought the pulmonary artery was extensively obstructed with coagula detached or extending from the right chambers of her heart. The real difficulty was therefore a thrombosis of the heart which had occurred in consequence of the attack of croup. I told the parents what accident had happened, and that the case was beyond the help of art. She sank and died at 2 o'clock A. M., March 2d, about seven hours after the pulmonary embolism occurred. Some time before death her countenance became very pale and her lips purple at their margin (*i. e.*, mucous border) and remained so to the end. No autopsy was allowed.

*Comments.*—On inquiry, I was not surprised to find that the same accident has been observed by other practitioners who have been called upon to treat membranous croup. The late Dr. Tanner, writing on the subject of thrombosis and embolism, and obviously having the functional disturbance of the heart and pulmonary artery, which they may produce, in full view, remarks: "With regard to croup, for example, my own experience would lead me to believe that death is much more frequently due to thrombi than to simple asphyxia." (Vide *Practice of Medicine*, pp. 61, 62, Am. ed., 1870.) In another place, while speaking of membranous croup, he also says:—

> "In a large number of the unfavourable cases death seems to take place from asphyxia, while in some instances it certainly appears due to a deposit of fibrin in the heart. After death from acute croup, Dr. Richardson has more than once found the cavity of the right auricle filled with a fibrinous concretion, which must have been formed during life, as the masses of fibrin were grooved by the currents of blood passing over them from the inferior and superior venæ cavæ. With such cases death begins at the heart, the dyspnœa being caused by the want of blood in the pulmonic capillaries. The lips are slightly blue, the body is pale, the pulse irregular, while the heart-sounds are feeble and quick and irregular. The sounds are muffled, and sometimes there will be a bruit. The respiratory murmur is everywhere audible, and frequently there are signs of emphysema." (Vide *op. cit.*, p. 501.)

Neither Aitken nor Niemeyer, however, mentions thrombosis of the heart and embolism of the pulmonary artery as a complication of membranous croup.

CASE III. *Chronic tuberculosis, both pulmonary and glandular; thrombosis of right heart and pulmonary artery suddenly supervened; death occurred three days afterwards.*—A young gentleman, in the nineteenth year of his age, of good family and luxurious surroundings, had suffered from tuberculous infiltration of both lungs, together with extensive enlargement of the lymphatic glands of his neck, for more than three years, his condition having apparently been stationary for a long time.

As the cold weather came on, however, in the fall of 1867, he declined very rapidly. His appetite deserted him almost completely. He lost flesh and strength with great rapidity, although he had but little if any pulmonary softening, and no hectic or other form of fever. He got some renal difficulty of an obscure nature, but I failed to find albumen in his urine although I tested for it on several occasions. By the forepart of February, 1868, the marasmus was extreme, the face very pale, the debility great, although he still insisted on dressing and sitting up every day. On the morning of the 14th of February, he was weaker still, but got up and dressed as usual. Shortly afterwards, however, while sitting in his chair, he was suddenly seized with faintness, and gasped for breath; his face became tinged with blue and Hippocratic; his skin cold and bedewed with sweat; his pulse thready and so frequent that it could scarcely be counted; his respirations difficult, and the heart-sounds very weak and indistinct. Thus struck with death, he was placed in bed as soon as possible; stimulants were given internally, and dry heat applied to his feet, legs, armpits, etc. He did not rally, however, but lingered on in this collapsed state for almost three entire days, namely, from Friday morning at 11 o'clock, when the change occurred, till Monday morning at 9 o'clock, when death, which during all this time had been momentarily expected, at last closed the distressing scene. A post-mortem examination was not allowed; still the phenomena which preceded death were such as belong to thrombosis of the right chambers of the heart together with embolism of the pulmonary artery, and in all probability these lesions were the proximate cause of the sudden change in his symptoms, and of his death.

A case of bronchial phthisis or bronchiectasis, which had been under my care about three years, terminated fatally with symptoms of cardiac thrombosis, in December, 1871. No autopsy was held, still the symptoms were so well marked that I have no doubt as to what was the immediate cause of death.

Furthermore, it is not an unusual occurrence for other cachectic disorders besides phthisis to prove fatal by inducing thrombosis of the heart and pulmonary artery; for example, syphilitic marasmus, carcinoma, granular kidney, and chronic dysentery. Pallor from anæmia and leucocythæmia is generally a conspicuous feature of the disease belonging to this category. Mr. Paget has reported a case in which thrombosis of the pulmonary artery occurred in a person suffering from stricture of the urethra and paralysis of the bladder. (Vide *Medico-Chirurg. Trans.*, vol. xxviii. p. 353 et seq.) This patient had granular degeneration of the kidneys. Mr. Paget remarks: "The frequent coincidence of granular degeneration of the kidneys with old clots in the pulmonary arteries is interesting." (*Ibid.*, p. 367.) It occurred in at least three out of five cases of renal disease collected by this writer. So also, in fatal cases of typhus and typhoid fever, thrombosis of the right chambers of the heart and pulmonary artery is not unfrequently the proximate cause of death. In the treatment of these diseases it is practically a matter of much importance to obviate the tendency to thrombosis, for, if we succeed in doing this, we will obviate the tendency to death, and thus, not unfrequently, will save patients who would otherwise be lost.

Again, the performance of a surgical operation is sometimes quickly followed by death, because thrombosis of the heart and pulmonary artery has been induced by it, or otherwise occurred in connection with it. The next three cases are examples in point.

CASE IV. *Thrombosis of right side of heart and pulmonary artery; the exciting cause probably the shock of a surgical operation; the efficient cause was doubtless abnormal coagulability of the blood; autopsy; lungs blanched and exsanguine; right heart and pulmonary arteries obstructed with a large, firm, decolorized, branched coagulum.*—Prof. Fayrer, of Calcutta, has reported an interesting and very instructive case in which cardiac thrombosis occurred. (See *Med. Times and Gaz.*, Nov. 2, 1867, p. 483.) It followed reamputation at the hip-joint for diffuse osteomyelitis of a recently formed stump.

The subject, a Hindoo lad, æt. 21, was admitted into the Medical College Hospital June 24, 1867, for traumatic inflammation of the right knee-joint of a destructive character. He had accidentally wounded this knee twelve days before with a cutting instrument. Amputation became necessary, and on July 2d, at 10 A.M., Prof. Fayrer performed the operation at the lower third of the thigh by a modified form of the circular method. We will continue the narrative in the operator's own words.

"*July* 3, 4 A.M. Bowels loose, moved four times since last report. Has not slept well, though he had an opiate. 7 A.M.: pulse 124; temperature 101°. Slight oozing from the stump on pressure.

"*4th.* This morning I find that he is not doing well. Pulse quick; skin hot. Had rigors during the day yesterday. Breathing hurried; dulness in the upper right side of chest, with moist râles. The stump is somewhat distended with blood, and the dressings are bloodstained. He appears to have had considerable venous oozing during the night. Opened the flaps, and removed blood-clots; found the bone protruding and stripped of its periosteum, the adhesion of that membrane being so feeble that the retraction of muscular fibre had stripped it from the bone; the medulla protruding, and, no doubt, suppuration commencing in the medullary cavity. The symptoms of toxæmia are already well-marked and rapidly increasing—so much so that removal of the entire bone by amputation at the hip-joint seems to offer the only, though but a small, chance of saving life.

"In consultation with my colleagues, the operation was at once decided on, and performed at 9 A.M. of July 4th. He was brought under the influence of chloroform, and the limb removed by the antero-posterior flaps. He was very low during the operation, though he lost but little blood, the artery being commanded by Prof. Partridge, whilst the limb was managed by Prof. Colles.

"Just after the operation his pulse was 140, and very feeble; temperature 98°. He remained in a depressed state until about noon, when imperfect reaction set in. When I saw him in the afternoon his pulse was 140; temperature 104°.

"*5th*, 7 A.M. He is not doing well; passed a restless night, although he had an opiate; has taken some nourishment and stimulants; is rather delirious, and tries to take off his bandages. Pulse still 140, and at times it rises even higher; temperature 103°; breathing rapid, and the lung sounds much as they were yesterday; no hemorrhage from the stump; general tenderness over the abdomen; his tongue is moist and blanched; he is restless, and has a tendency to delirium. Stimulants and nourishment ordered to be given frequently. 3 P.M.: He is much in the same condition, perhaps weaker; pulse very rapid, over 140; temperature 103°; has had no rigors since the operation. Shortly after, his breathing became very hurried, and he sank at 11 P.M.

"*Post-mortem examination at* 9 *A.M., July* 6*th.*—Decomposition, owing to the great heat and dampness of the weather, proceeding rapidly. *Thorax:* Pleuræ contained some fluid, but there were no evidences of inflammation. Pericardium also contained more than the natural quantity of fluid. Heart healthy in structure; left ventricle contracted, and contained neither blood nor fibrinous clot; right ventricle contained a firm, flattened, and adherent decolorized clot extending far into the ramifications of the pulmonary artery. The right auricle was stuffed with a firm, white clot, supplemented by a more recent clot. The obstruction evidently lay here. The lungs were blanched, some portions of them quite exsanguine; others contained a little blood. They were both emphysematous and œdematous. No change of structure anywhere in either the lungs or liver. *Abdomen:* No sign of peritonitis; no extension of inflammation or suppuration into the abdominal cavity along the crural canal. Pelvic fascia raised; no suppuration found anywhere in the pelvis; liver and abdominal viscera pallid, but healthy. Nothing remarkable in the stump.

"Bone examined after amputation; medulla infiltrated with pus.

"Reaction after the hip amputation never was thoroughly re-established, and, in this condition, embolism [thrombosis] rapidly occurring in the right side of the heart, terminated life."

*Remarks by Prof. Fayrer.*—"The immediate cause of death in this case appears to me to have been the formation of coagula in the right side of the heart, a pathological condition likely enough to supervene in the state of exhaustion—due to blood-poisoning in the first instance, and the shock of the amputation in the second—in which the patient was placed. The firm, adherent, decolorized clots in the right cavities of the heart, the plugged pulmonary arteries, together with the blanched, emphysematous, and œdematous lungs, clearly indicate this to have been the case. The earlier pathological condition of toxæmia was due, no doubt, to osteo-myelitis in the femur, setting in after the amputation of the lower third of the thigh. The absence of any structural change in the viscera leads me to suppose it possible that, had embolism [thrombosis] of the right side of the heart not occurred, and had reaction been more fully established, he might have recovered, as happened in the case of a young man whose thigh I removed at the hip-joint for osteo-myelitis some years ago, when the symptoms of pyæmia had well set in, but who recovered after the reamputation, and is now alive and well.

"The occurrence of these clots is not unfrequent in pyæmic cases, and is the immediate cause of death in many; and it may be regarded as one of the dangers to be apprehended in cases where blood changes have taken place after surgical operations or wounds, and it is probably a frequent cause of death in those rapidly fatal cases of pyæmia in which no structural changes are found in the lungs, liver, spleen, or kidneys, after death. No doubt death may occur from the intensity of the poison alone, without the presence of those fibrinous clots, or of gangrenous patches and puriform collections [which] we generally see in the lungs and other viscera; but I think that if such fatal cases were carefully examined it would be found that the fatal event might be traced to obstruction of the pulmonary circulation in the right side of the heart, more frequently than to the direct toxic effect on the blood and nerve-centres."

We concur with Prof. Fayrer in the opinion just expressed. Furthermore, we believe that central thrombosis should be looked upon as a complication which is liable to attend the performance of surgical operations in general, but more especially those done on cachectic subjects, or those involving much shock or hemorrhage. Now that our attention is directed to the matter we can call to mind several enigmatical cases that have occurred in our own practice, in which capital operations have proved unexpectedly fatal, in all probability, by inducing central thrombosis.

CASE V. *Ovariotomy followed by thrombosis of the right heart and pulmonary artery; death on the fourth day; autopsy.*—This case occurred in the practice of Mr. Spencer Wells, and is reported by Dr. Parsons in the *Obstetrical Transactions*, vol. vii. London, 1866.

The subject was a young woman, æt. 20, and moderately healthy. The operation was quickly and easily performed. She recovered satisfactorily from the anæsthetic, which was chloroform, and remained comparatively well for twenty hours. About this time her pulse rose to 120, and she became very thirsty.

On the 2d day her pulse rose to 140, "and there was a peculiar look of oppression in the countenance."

On the 3d day this oppression was greatly increased; pulse 140 to 150; urine albuminous and scanty; heart-sounds indistinct and muffled, and a peculiar dusky hue about the face appeared.

On the 4th day she became still more oppressed and very restless, the surface of her body grew cold and white, and thus she died.

At the *autopsy* the thrombus was seen to be firmly adherent to the greater part of the wall of the right ventricle, and particularly so in the auricular appendage where it seemed to have begun; for here the clot almost filled the appendix, and was accurately moulded to the little muscular eminences. The clot was continued through the tricuspid opening into the right ventricle, and where it passed through this opening almost filled it; in the right ventricle this clot was intricately interlaced with the chordæ tendineæ and columnæ carneæ. As the thrombus extended along the pulmonary artery to the lungs, it was found to be tubular and adherent to one of the semilunar valves. The foregoing is an abstract of the original report. The case is there entitled embolism of the pulmonary artery, but it seems to have been, in reality, an example of primary thrombosis of the right chambers of the heart and the pulmonary artery.

E. von Wahl has related a case of pulmonary embolism which occurred after the removal of a tumour. (See *St. Petersb. Med. Zeitschr.* v. 327; also *New Syd. Soc. Year Book*, 1864, p. 193.) The particulars are not given in the works to which the writer has access.

CASE VI. *External urethrotomy performed for the relief of urinary fistula in perineo resulting from stricture; death on third day with symptoms of central thrombosis.*—This case occurred at Bellevue Hospital, in the practice of Prof. Gouley, to whom the writer is indebted for the notes of it.

A young man, æt. 23, a bar-tender, the subject of an old urethral stricture, which some time previously had led to retention of urine and the formation of fistula in perineo, and now an inmate of Bellevue Hospital, was operated on by Prof. Gouley at this hospital, October 19, 1867. He seemed to be in fair condition. Careful examination of his urine had failed to reveal any evidence of bladder or renal disease. He had no constitutional disorder except a syphilitic taint, which was evidenced by copper-coloured scars on his legs and some nocturnal rheumatism. The operation (external urethrotomy) was quickly and easily performed. The patient was kept on the operating table not more than fifteen minutes. The anæsthetic was sulphuric ether. He bore it well, and recovered promptly from it and from the shock of operation. He did not lose more than two ounces of blood. At the evening visit slight febrile reaction was observed; pulse 100. He said he had had a chill.

*October* 20. This morning he was quite comfortable and free from pain, but his pulse was somewhat above 100. That afternoon his heart's action suddenly became very rapid and feeble, and his breathing laboured.

Under free stimulation he rallied somewhat, but the improvement did not long continue.

21*st.* He presented a cyanotic appearance; his countenance was tinged with blue and Hippocratic; his pulse very feeble and so rapid that it could not be counted, and his breathing laboured. At the same time he was perfectly sensible and free from pain. He continued to sink, and died that evening fifty-six hours after the operation. He had no vomiting, nor diarrhœa, nor hemorrhage, nor suppression of urine. No autopsy could be obtained because of opposition from his friends. The clinical phenomena, however, clearly indicate that the blood-flow was obstructed in the right side of the heart and pulmonary artery with coagulum.

It is worthy of remark that this man was labouring under constitutional syphilis, and therefore was not free from blood-disease, when the operation was performed. We shall have occasion to mention in another place several syphilitic cases in which thrombosis supervened.

But thrombosis may also occur on the left side of the heart. In all the cases which we have thus far related, it is believed that only the right chambers of the organ were affected, or at least that they were the principal seat of the disorder. We shall next refer to some instances of a different character.

McKendrick (*Edinburgh Med. Journ.*, xv. 396) publishes a case of cardiac thrombosis that occurred in a girl of nineteen, in which the clot caused death by closure of the mitral orifice. (Vide *New Sydenham Soc. Retrospect*, 1869–70, p. 153.)

Bristowe (*Path. Soc. Trans.*, London, xix. 90) gives the case of a widow who suffered from chronic renal disease, aggravated by catching cold, and gradually sank. The autopsy showed cystic kidneys with shrunken cortex; the heart contained large adherent clots. At the apex of the left ventricle were several rounded, smooth coagula, softened within to a creamy pulp, inclosing, in places, numerous hæmatoid crystals, and attached to the parietes by means of processes prolonged beneath the columnæ carneæ. He holds the case to be an instance wherein heart-clots were formed some considerable time before death, long enough at least for puriform softening to occur in them. (*Ibid.*, p. 154.)

Gaskoin (*Med. Times and Gaz.*, 1869, ii. 276) records a case of "polypus" of the left side of the heart, causing sudden death in a lad of seventeen. After death a yellow ribbon-like clot was found implanted in the columnæ carneæ, enveloping the tendinous cords of the mitral, and prolonged into the aortic orifice. In its middle a bulging existed which contained about a drachm of disorganized blood. He considers it possible that the aorta was occluded, and thus death produced. (*Ibid.*, p. 154.)

Bucquoy (*Gaz. Hebdom.*, 1869, p. 155) showed to the *Société Médicale des Hôpitaux* a preparation in which an old thrombus (concretion polypiforme) was adherent to the top of the cavity of the left ventricle, without any other lesion of the endocardium; connected with the old clot was one of more recent origin, about the size of a hen's egg, non-adherent, and exactly filling the cavity. It was taken from a woman aged twenty-six, who had presented symptoms of mitral insufficiency (hypertrophied and dilated heart, with systolic bruit at base propagated into axilla). He remarks that it was doubly interesting, first, as an example of thrombus formed a long time before death; and, again, because, in spite of the physical symptoms, it was the only lesion found. (*Ibid.*, p. 154.)

*The symptoms of central thrombosis* vary according to the part of the heart affected, the size of the clots, the rapidity of their formation, and the strength or vitality of the patient. When the right side of the heart or the pulmonary artery is the seat of the thrombi, the symptoms are those of more or less suddenly produced asphyxia, syncope, and disordered action of the heart itself. Playfair's patient complained of feeling weak; then her rapid and difficult breathing attracted attention, and in a short time she died. Roget's case exhibited severe dyspnœa. In puerperal subjects faintness, irregular action of the heart, and distressed breathing suddenly occur, the tendency to collapse rapidly increases, and death usually soon ensues. Sometimes, however, these subjects complain only of sudden dizziness and faintness, gasp for breath, and quickly die. Niemeyer observed in his two cases of pulmonary embolism the signs of extreme dyspnœa and collapse; and he calls the disorder a "peculiar kind of suffocation." Malmsten's case exhibited great dyspnœa and severe palpitation; the heart-beat was so strong that the chest was shaken by it. My own cases show that, when thrombosis of the right heart or pulmonary artery occurs, dyspnœa of greater or less severity, syncope of greater or less intensity, and disturbance of the heart's action in the shape of increased frequency, or irregularity, or palpitation, one or all combined, suddenly present themselves; the countenance exhibits great anxiety and rapidly becomes pale, with a blue or purple tinge on the margins of the lips; the skin is soon bedewed with cold sweat; the pulse at the wrist is found to be frequent, feeble, sometimes irregular, and it generally becomes in a short time imperceptible; the signs of asphyxia and collapse rapidly increase, and death usually soon closes the scene. On listening to the chest we find the respiratory murmurs either normal or somewhat increased in intensity (puerile), and the heart-sounds more or less indistinct or muffled and tumultuous; occasionally, however, a bellows murmur may be heard over the pulmonary artery when the orifice of that vessel is obstructed. In one of Dr. Playfair's cases, "immediately over the site of the pulmonary artery was a distinct, harsh, rasping murmur, confined to a very limited space. Heart-sounds feeble and tumultuous," as already stated. The dyspnœa is caused by diminution of the breathing-space in the lungs when a large branch of the pulmonary artery is obstructed, and by want of blood to be oxygenated in the pulmonary capillaries in general when the main trunk of that vessel is blocked up. The bellows murmur mentioned above has been only occasionally observed in thrombosis of the right heart or pulmonary artery.[1]

When the left chambers of the heart are affected, the symptoms differ somewhat from those mentioned above. The intense dyspnœa and other symptoms of suffocation already mentioned are either absent or much less strongly marked. If the thrombus extends from the left auricle through the mitral opening into the left ventricle, the symptoms are likely to be those of mitral obstruction and mitral insufficiency. Thus, Bucquoy observed in his case of thrombosis of the left heart the symptoms of mitral insufficiency, viz., hypertrophy and dilatation of the organ, with systolic bruit at its base, propagated into the axilla, as already mentioned. In McKendrick's case it is stated that death was produced by closure of the mitral orifice. If, on the other hand, the thrombus extends from the left ventricle through the aortic opening into the aorta, the symptoms are those of aortic obstruction and insufficiency of the aortic valves. Gaskoin found in his case that the clot was prolonged into the aortic orifice, and he thinks it possible that the death, which was sudden, was due to occlusion of that orifice. Furthermore, thrombosis of the left side of the heart is likely to be attended with pulmonary hyperæmia, with a cyanosed appearance of the countenance, etc., with a turgid condition of the external jugular and other veins of the neck and face, and with a remarkable weakness or even absence of the radial pulse. It is also probable that, in the less acute cases of this form of cardiac thrombosis, cardiac murmurs may not unfrequently be detected by auscultation at points on the chest corresponding with the disturbance which the clots may occasion at the mitral or aortic openings of the heart respectively.

2. *Peripheral Thrombosis.*—There are two varieties of this affection, namely, *a*, *venous*, and *b*, *arterial*. They depend upon whether the peripheral veins or the peripheral arteries are the seat of disorder. The former, however, occurs much more frequently than the latter, and possesses a much greater degree of importance in a practical point of view.

We shall now proceed to relate a considerable number of cases in which thrombosis occurred in the veins of the extremities—enough to illustrate the principal forms of traumatic or surgical thrombosis that are met with in the extremities, together with the clinical and pathological history of the same. All of them occurred in the writer's practice.

---

[1] In examining post-mortem the cases where thrombosis of the right heart and embolism of the pulmonary artery have occurred, we find a considerable variety in the appearances presented by the pulmonary tissue. In some cases well-marked infarctions are present; in other cases, such, for example, as No. I., the pulmonary tissue is congested, and in others still, such, for example, as Professor Fayer's (No. IV.), that tissue is found to be blanched and exsanguine. These differences appear to depend upon the size and place of lodgement of the occluding plugs in the pulmonary artery. If the main trunk is suddenly and completely closed by a thrombus, the lungs become blanched and exsanguine; if only partly closed, they become congested, and if, instead of the trunk, the branches become plugged by small clots, then infarctions are found in the corresponding parts of the pulmonary parenchyma.

CASE VII. *Compound fracture (gunshot) of right thigh; pyæmia; death; autopsy; metastatic abscess in left popliteal space; thrombosis of left femoral and external iliac veins; embolism of right femoral artery, near the seat of fracture; right femeral vein free from coagula; no visceral abscesses; spleen enlarged and softened; kidneys somewhat granular, etc.*—Private J. S., Co. "A," 55th Ohio Vols., aged 20, admitted to the Stanton U. S. Army General Hospital, *June* 15, 1863, for a wound received on the 2d of *May*, in the battle of Chancellorsville. He sustained a gunshot fracture of the right femur. He also informed us that the projectile had not been extracted, and that he had been treated in the Field Hospital at Potomac Creek, until the military operations rendered the evacuation of that place necessary. A simple straight fracture-box had been employed in the treatment of his injury, and his limb was still in it when he was brought to Stanton Hospital.

Examination at the time of admission showed that the right femur was broken near the junction of the lower with the middle third, that union had not yet taken place, that the wound of the soft parts still remained unclosed, and that a thin purulent matter was discharged in large quantity from the orifice of this wound. He was pale or anæmic, emaciated, and weak. His pulse was frequent and irritable; his tongue smooth, dry, and red, and he complained of having diarrhœa; said, however, that the diarrhœa was an old affair, and that he had also had chills and fever some time back. The prognosis was very unfavourable. The treatment consisted in placing the injured limb in Hodgen's cradle-splint, in supporting him with nourishing food, using eggs, milk, farina, beef-tea, and chicken-broth as extras, together with a liberal allowance of milk-punch daily, for that purpose, and in administering pil. camphor. et opii to control the diarrhœa.

*June* 18. The diarrhœa is checked; but the tongue continues red and smooth, and there is considerable irritability of stomach. Directed camphor and opium pills to be suspended, but the supporting treatment to be continued.

22*d*. Secondary hemorrhage from wound in thigh, to the extent of about three ounces, occurred this morning; a slight hemorrhage also took place yesterday. The blood probably came from some branch of the arteria profunda. Liquor ferri persulph. f℥ij was now thrown into the bottom of the wound through a catheter, and the bleeding was permanently arrested.

24*th*. Complained of pain in his thigh, was restless, and had some diarrhœa. Gave pil. opii gr. j, every four hours, and continued the supporting treatment.

26*th*. Stopped the opium, as the diarrhœa was checked. Tongue still smooth and red, and the purulent discharge continued to be profuse. Nourishing diet, with stimulants, continued.

*July* 2. He appeared to be slowly failing. Fluctuation having been detected just above the internal condyle of the femur, an incision was made and about two ounces of pus evacuated. Directed quiniæ sulph. gr. ij, in solution, to be administered three times a day; spiritus frumenti f℥vj to be taken daily in place of the milk-punch, as he thought the latter did not agree with him, and the extra diet to be continued.

*8th.* Began to exhibit night-sweats, with increase of pallor and anæmia; purulent discharge profuse, dirty-looking, and fetid; necrosed bone, firmly impacted, can be felt at bottom of wound.

*18th.* Had a chill which was distinctly followed by a hot and sweating stage. Prescribed quiniæ sulph. gr. x, ter in die, and the chills did not return until four days afterwards.

*20th.* Very pale and feeble; tongue still smooth and red. Ordered quiniæ sulph., with tinct. ferri muriat., porter two pints daily, and nourishing food.

*21st.* The diarrhœa returned, and was again checked by administering opium pills.

*22d and 23d.* Had chills occurring at irregular intervals, associated with hot flushes and profuse perspiration, *i.e.* the symptoms of pyæmia, and his debility was much increased.

*25th.* Evacuated some dirty, stinking pus from inner side of right thigh by incision.

*27th.* He again had pyæmic rigors and sweats; was now much emaciated, very pale, and very weak; pulse 120, and feeble, tongue glazed and bright red.

*29th.* The pyæmic rigors and sweats continue, the perspiration being very profuse. His left or unwounded leg and thigh have suddenly become swollen with œdema, and present a bluish or cyanosed appearance. The subcutaneous veins of this limb look like dark-blue knotted cords. These symptoms denote that the flow of blood upwards towards the heart through the corresponding femoral and external iliac veins has been suddenly obstructed. From this time he sank still more rapidly, and died, exhausted from pyæmia, July 31.

*Autopsy twenty-four hours after death.*—Fragments of the right or broken femur firmly united; necrosed parts closely surrounded by involucrum; muscles and intermuscular connective tissue of right thigh extensively infiltrated with pus; bullet (a conoidal one, and much flattened) was found in the lower part of inner side of thigh. Femoral artery opposite the place of fracture contained an oval-shaped, reddish, flesh-like coagulum, or embolus, having the size of a small bean, which completely occluded it; no other abnormity of artery noticed. On examining the left thigh we unexpectedly found a metastatic abscess in the popliteal space, containing about an ounce of pus. The external iliac and femoral veins of this thigh were also found to be filled up with recently coagulated blood, or thrombi, while the veins of the right or wounded limb were normal. The thrombosed veins of the left thigh were so well filled with coagula that they presented a knotted appearance; their walls were somewhat thickened, apparently from imbibition, their internal surface exhibited a reddish stain derived also from imbibition, but there was no plastic exudation, no capillary injection, no inflammatory reddening within or on their tunics, and no evidence whatever that a genuine phlebitis existed. The lungs contained some frothy serum, *i. e.* they were œdematous, but in other respects natural. The left auricle and ventricle of the heart each contained some firmly coagulated blood; the right chambers also contained fibrinous coagula. The liver was somewhat enlarged, nutmegged, and fatty. The kidneys were beginning to be granular. The spleen was enlarged, softened, and reddish-brown in colour.

*Comments.*—This case possesses great importance, and, therefore, has been related with considerable minuteness. This patient had pyæmia, thrombosis of the veins of one thigh, and embolism of the main artery of the other thigh, in addition to gunshot fracture of the femur; and his case serves uncommonly well to illustrate the symptoms which are sometimes produced by peripheral thrombosis, and to show the kind of relationship which exists between this affection and pyæmia.

With regard to the symptoms, we may remark that, as soon as the great veins became obstructed with coagula, certain objective phenomena of a very striking character were produced. The whole limb suddenly became expanded with an œdematous swelling, having a bluish leaden or cyanosed hue, together with a strongly dilated condition of the subcutaneous veins. They looked like dark-blue knotted cords lying just beneath the skin. They were widely expanded because the blood, being no longer able to find its way back towards the heart through the deep or thrombosed channels, had sought to pass through the superficial veins, in great quantity, as the collateral channels. The limb became œdematous because the collateral channels were insufficient, and did not permit the blood to flow out of the limb as fast as it flowed into the limb through the arteries. Its surface was tinged with a bluish or leaden hue because the hyperæmia was very great, and the blood stagnated in the radicles of the cutaneous veins.

With regard to the pyæmia, we may observe that the symptoms which characterize this disease fully revealed themselves more than a week before death, and that the symptoms of thrombosis did not appear until several days afterwards. The symptoms of the latter first showed themselves only two days before death, that is, about a week after unmistakable signs of pyæmia had appeared. We must also remark that a so-called metastatic or secondary abscess, itself a product of the pyæmia, was found in the left popliteal space, and that the process of blood-clotting, or the thrombosis in all probability began in the small veins proceeding from the site of this abscess. From it the thrombosed vessels doubtless sprung. The formation of this abscess evidently preceded that of the thrombi. The morbid products found in it were obviously of an older date than those found in the veins. The pus in it was comparatively old, while the coagula in the veins were quite recent. As stated above, the vessels in which the thrombosis commenced, in this case, were doubtless some of the venous radicles belonging to the walls of the secondary abscess. From them the process of coagulating the blood extended itself to the next larger veins, and from them in turn to those next larger still, until finally it entered the femoral and external iliac veins, and caused them to be filled up with thrombi. This order or succession of marches from the lesser to the next greater vessel, which this variety of peripheral thrombosis generally observes in its advance, until the main vein of the extremity is invaded, has been clearly described and illustrated with drawings by Virchow (see *Lectures on Cel-*

*lular Pathology*, pp. 235 to 240, Am. ed.), and by Mr. Callender (see *Holmes's System of Surgery*, vol. iii. pp. 297, 298, 1st ed.). Virchow says :—

> "The thrombi in the small branches do not content themselves with advancing up to the level of the main trunk, but pretty constantly new masses of coagulum deposit themselves from the blood upon the end of the thrombus, layer after layer, the thrombus is prolonged beyond the mouth of the branch into the trunk in the direction of the current of the blood, shoots out in the form of a thick cylinder further and further, and becomes continually larger. Soon this *prolonged* thrombus no longer bears any proportion to the original (*autochthonous*) thrombus, from which it proceeded. The prolonged thrombus may have the thickness of a thumb, the original one that of a knitting-needle. From a lumbar vein, for example, a plug may extend into the vena cava as thick as the last phalanx of the thumb." (*Op. cit.*, p. 239.)

Thus, the clotting process, after commencing in the venous radicles of an extremity, may spread upwards by prolongation from branch to branch, until finally the trunk-vein itself becomes plugged up with thrombi ; and we believe that this occurred in the case which we have just related.

The embolism which was revealed by the autopsy of this case occurred in the wounded limb, while the thrombosis, as we have shown above, took place in the uninjured one. The plug (*embolus*) was found in the femoral artery opposite the place of fracture. It consisted of a firm, reddish-coloured coagulum. It was oval-shaped because its angles had been rounded off while it was swept along in the torrent of the arterial blood. It had obviously become stuck fast in the right femoral, because the calibre of this artery was too small to allow its further progress, and in consequence thereof, it filled up the vessel like a plug. The embolism probably occurred during the last hours of life, for the limb had not yet suffered any of those secondary changes which are sure to follow this accident when life happens to be prolonged. The embolus doubtless came or migrated from the left ventricle of the heart. A thrombus was formed in that situation as death approached, and a fragment having been detached from it was carried away in the blood-stream to the right femoral artery, where its journey was arrested in the manner above stated. It is, however, a remarkable coincidence that the migration of this clot ceased at the point which was nearest to the place where the femur was broken ; but there is no proof that this coincidence was anything more than an accident.

Concerning the thrombosis of the heart, to which allusion has just been made, we should state that it involved both the right and the left sides of the organ, and both auricle and ventricle on each side. The cardiac coagula probably began to form as soon as the circulation began to fail, and the blood began to stagnate in the cardiac chambers. This event probably occurred either on the day of dissolution, or on that which preceded it.

The formation of thrombi in the veins of the left thigh in this case was not due to inflammation of those vessels, as we have fully shown, nor yet entirely to the putrescent character of the popliteal abscess, nor even principally to causes which were local in their operation, for the thrombosis was not limited to these vessels; it presented itself also in all the cavities of the heart. Now, the efficient cause of the thrombosis was doubtless the same in the heart as it was in the peripheral veins, and should be sought for in some abnormal condition of the blood itself—in some state of that liquid which occasions preternatural coagulability. Thus, it happened that when this morbid tendency of the blood to curdle was favoured by the operation of local causes, such, for example, as stagnation in the heart and a corrupting abscess in the limb, thrombosis occurred in each of these situations. Moreover, this patient had shown decided evidence of blood-disease for at least two or three weeks before death. It first presented itself in the shape of anæmia (leukæmia ?), which steadily increased, then hectic fever with night-sweats appeared, and finally pyæmia occurred. The autopsy revealed advanced splenic and commencing renal disease. These circumstances obviously favour the hypothesis that the thrombosis was mainly due to some morbid state of the blood.

Lastly, this case shows what relationship actually subsists between peripheral thrombosis and pyæmia. Virchow, and others who adopt his views, assert, that, when pyæmia occurs, it is because the softening or disintegration of thrombi in the peripheral veins furnishes embolia in the shape of minute shreds and fragments of the dissolved thrombi, in more or less considerable numbers, which are carried to the right side of the heart by the stream of venous blood, and, passing onwards into the pulmonary artery, they become arrested in the ramifications of that vessel, and in the end plug them up, inducing thereby pulmonary infarctions, secondary inflammations, metastatic abscesses, etc.; or, in other words, that pyæmia is a consequence of peripheral thrombosis. Now, the case which we have just related shows very clearly, 1st, that peripheral thrombosis and pyæmia do not necessarily stand to each other in the relation of cause and effect, because, in it, the pyæmia preceded the thrombosis by a considerable number of days, and, therefore, could not have been produced by it; 2d, that the presence of infarctions, or secondary inflammations, or secondary abscesses in the lungs or any other viscera, is not essential to the production of pyæmia, for in this case all the viscera were quite free from these lesions; and 3d, that the only tie which binds pyæmia to peripheral thrombosis, or *vice versa*, is the circumstance that both of them depend for their existence upon disease of the blood. An examination of other cases, however, will show us that the disorder of the blood which constitutes pyæmia, and that which induces peripheral thrombosis, are not the same, for we shall find a great many cases in which thrombosis of the peripheral veins is not attended with pyæmia, and some cases in which pyæmia is not attended with peripheral thrombosis. Thus, the foregoing case, when taken in connection with others, proves that the relationship of peripheral thrombosis to pyæmia, and *vice versa*, is, after all, not very intimate in its nature; certainly not that of parent and offspring.

CASE VIII. *Gunshot wound of right thigh in middle third; bone apparently not injured: bullet lodged; well-marked symptoms of pyæmia; parenchymatous hemorrhage on 32d and 33d days; death; autopsy; femoral, external, and common iliac veins filled up with coagulated blood (thrombus), which, in some places, was undergoing puriform liquefaction.*—Private B. R., Co. "F," 6th Michigan Cavalry, was admitted into the Stanton U. S. Army General Hospital, September 25, 1863, for a gunshot wound in the middle third of his right thigh, received two days previously. The ball penetrated his thigh on its inner side, and, lodging in a deep situation, was not extracted. The wound had been treated with simple dressings, and appeared to be doing well.

*October* 11. The ward surgeon, at the morning visit, found him perspiring very freely; he said that he had had a chill, followed by fever, in the night: quiniæ sulph. gr. xxx was ordered; the wound looked well, and its discharge appeared normal. The chills ceased, but he gradually sank into a typhoid condition, with symptoms of rheumatism in several joints; he could not move his left arm, or either of his lower extremities; complained of suffering acute pain whenever he was stirred; the left knee was somewhat swollen; there was some œdema in the right or wounded thigh; his tongue was dry and covered with a thick yellowish-brown coat; it could not be readily protruded; his skin was hot, yet generally moist, and often wet with sweat; mental faculties sluggish; bowels loose, but not to the extent of diarrhœa; stools, most of the time, dark-coloured; sometimes the feces and urine were passed in bed without the patient's knowledge; his pulse ranged at about 100; he was treated with quinia and iron, stimulants, beef-tea, etc., with gradual improvement of all his general symptoms; the tongue became more moist, the intellect brighter, the pulse subsided to about 80, he could be handled without suffering much pain in the joints, and he acquired some appetite.

Meanwhile the wounded limb grew more œdematous. It was not, however, noticed as anything remarkable until about Friday, October 23. The surface of the wound looked well, but the discharge was slightly tinged with a greenish hue and had some odour. October 25, while the patient sat in a chair in order to have his bed made, hemorrhage from the wound suddenly took place. It amounted, in the ward-surgeon's opinion, to four or five ounces. It was venous in character, judging from the colour and steadiness of the flow. It ceased spontaneously. He was placed in bed, and soon afterwards had a chill, which, however, lasted but a few minutes. From this time he rapidly failed. In the night he had another chill. On the next morning (October 26) the bleeding returned to the extent of three or four ounces. It again ceased spontaneously. He had several chills during the day, continued to sink rapidly, and died about 3 o'clock P.M.

*Autopsy twenty hours after death.*—Lungs fastened to thorax by numerous old adhesions; moderately congested; otherwise sound; milk-spot on anterior surface of heart; no other abnormity of that organ noticed; blood watery and cherry-coloured; liver bronzed from malarial intoxication, but exhibits no other abnormity; spleen moderately enlarged and somewhat softened; intestinal canal presented nothing abnormal.

The right lower extremity was much swelled and œdematous from foot to groin. Its surface presented a remarkably white colour. On opening this thigh and groin by incisions made along the course of the femoral and iliac arteries, the chain of lymphatic ganglia is found to be very much enlarged in all its component parts. The walls of the femoral and iliac (both external and common) veins are very much thickened. In several places where these vessels were opened by cutting with scissors the walls appeared to be about three times thicker than natural, as was remarked by Dr. Woodward. The upper part of the common iliac vein was occluded with a plug of coagulated blood, which adhered firmly to the sides of the vessel. Its apex was conical in shape and pointed upwards towards the heart. The interior of this plug was undergoing softening or fatty transformation. Below, or on the distal side of this plug the veins (common iliac, external iliac, common femoral, and superficial femoral as far as examined) were filled with a thick, dirty-looking liquid, having an ashy-brown colour, and consisting of blood-clot or thrombus undergoing spontaneous disintegration. The lining membrane of these veins had lost its polished and shining appearance, and was coated over with a yellowish-brown layer of what seemed to be plastic exudation. The matter contained in these veins was not purulent but puriform. The vena profunda femoris was filled with a recent coagulum. The vena cava ascendens was stained dark red on its interior with hæmatoidin. The femoral and other arteries were sound. The thrombosed veins were not inflamed, *i.e.*, their walls were not the seat of any primary inflammation, but exhibited only the consequences of thrombosis. The thickening and other changes in their coats were all of a secondary nature and resulted from the formation and disintegration of coagula within their calibre.

There was a good-sized abscess filled with dark-coloured and very fetid pus, situated near the junction of the external and internal iliac veins and dipping down considerably into the pelvis. It communicated with the calibre of the external iliac vein through an aperture made apparently by ulceration. It is, however, possible (but not probable) that this opening in the wall of the external iliac vein was made by accident while performing the autopsy.

*Comments.*—The thrombosis described above probably began in some of the venous radicles belonging to the walls of the abscess which had been formed in the thigh in consequence of the gunshot wound. Afterwards the coagula were prolonged from the smaller to the next larger tributaries, step by step, until finally the superficial, the deep, and the common femoral, together with the external and common iliac, veins became filled up with clotted blood. This accident mostly occurred some considerable time before death, and meanwhile the thrombus itself, instead of becoming organized, underwent disintegration to great extent, and acquired the appearance or properties which are due to puriform softening to corresponding extent. Concerning this process Virchow says :—

> "Upon investigating the history of these thrombi, we find that the puriform mass which is met with in their interior does not originate in the wall [of the vein], but is produced by a direct transformation of the central layers of the clots themselves—a transformation, indeed, which is of a chemical nature, and during which, with a result similar to that which can be artificially obtained by the slow digestion of coagulated fibrin, the fibrin breaks up into a finely granular substance, and the whole mass becomes converted into *debris*. This is a kind of softening and retrograde metamorphosis of the organic sub-

stance, in the course of which, from the very commencement, a number of extremely minute particles become visible; the large threads of fibrin crumble into pieces, these again into smaller ones, and so on until after a certain time has elapsed the chief part of the mass is found to be composed of small, fine, pale granules. In cases where the fibrin is comparatively very pure, we frequently see scarcely anything else than these granules."

Thus, "the microscope solves the difficulties in a very simple manner, by demonstrating that this mass, which looks like pus, is not pus. For we understand by pus a fluid essentially provided with cellular elements. Just as little as we can imagine blood without blood-corpuscles, just as little can pus exist without pus-corpuscles. But, when, as in the present instance, we find a fluid which is nothing more than a mass pervaded by granules, this may, indeed, as far as external appearance goes, look like pus, but never ought to be regarded as real pus. *It is a puriform, but not a purulent substance.*" (See *Virchow's Lectures on Cellular Pathology*, pp. 233–234 Am. ed.)

But we frequently see in softening thrombi certain morphological constituents besides these granules, certain real cell-structures, which are round (spherical), or angular, present one, two, or more nuclei, often lie tolerably close to one another, and exhibit a strong resemblance to pus-corpuscles, the principal difference being that very frequently fat-granules occur in them, indicating that a process of disintegration is going on. These cell-structures are the white corpuscles of the blood. Whilst, therefore, in some cases there can, on account of the very greatly preponderating mass of *debris*, be no doubt as to what the observer has before him, in others considerable doubt may exist as to whether real pus is present or not. These doubts cannot be removed in any other way than by an examination into the history of the development of the puriform mass itself. The colourless blood and pus-corpuscles resemble each other so closely that it is generally impossible to draw a real distinction between them. The question, therefore, which suggests itself when we find round, colourless, nucleated cells in a softening thrombus, whether these cells are white blood or pus-corpuscles or not, can only be decided by determining whether they were present in the thrombus from its very commencement, or sprang up in it afterwards, or entered it in some other way. Now, upon closely following up the different stages of the process, the result is very positively obtained that the corpuscles pre-exist—that they do not arise within the clot, and are not forced into it. Even when fresh thrombi are examined, the corpuscles are found, in many places, heaped up in great masses, so that, when the fibrin breaks up, they are set free in such numbers that the *debris* are almost as rich in cells as pus. It is with this process just the same as when water which is thoroughly impregnated with solid particles is frozen and then warmed again; when the ice melts, the inclosed particles must of course again come to light. (*Virchow.*)

But to this view an objection of some importance may be raised, namely, that we do not see the red corpuscles of the blood set free in a similar manner. The red corpuscles, however, perish very early; they are soon seen to grow pale; they lose a portion of their colouring matter and become smaller or shrunken, whilst numerous dark granules appear at their circumference, and, in the majority of cases, they entirely disappear, nothing but these granules at last remaining. Still there are also cases in which the red corpuscles maintain their integrity within the softening mass. As a rule they certainly perish, and it is upon this circumstance that the peculiarity of the transformation depends, whereby a yellowish-white liquid having the colour of pus springs from clotted blood. And for it too an explanation may be found without much difficulty, if it be borne in mind how very trifling is the power possessed by the red corpuscles of the blood to resist the most various reagents. If to a drop of blood you add a drop of water, you see the red corpuscles disappear before your eyes while the colourless ones remain behind. (*Virchow*, p. 234.)

Thus we perceive that the disorder which was formerly called suppurative phlebitis, is essentially neither suppurative nor inflammatory in character, that it is not a phlebitis but an affection of the blood itself in consequence of which coagula spontaneously form in the peripheral veins, and, when life is sufficiently prolonged, undergo puriform softening. The whole history of the process by which puriform matter is produced in the veins in such cases is contained in the history of the thrombi themselves. (*Virchow*, p. 236.)

Furthermore, the process runs its course in such a way that the most recent parts of the thrombus always consist of the blood which has most lately coagulated. The softening or the partial liquefaction generally commences in the centre, in the oldest layers, so that, when the thrombus has attained some considerable size, there exists in the midst of it a cavity of larger or smaller dimensions, which gradually enlarges and keeps approaching more and more closely to the wall of the vessel. But this cavity is usually defended at both its proximal and distal ends by means of a more recent and tougher portion of the clot, which, after the manner of a cap, takes care that, as Cruveilhier says, the "pus" remains sequestered, and all contact between the *debris* and the circulating blood is prevented. The softening continues to extend in a lateral direction until finally it reaches the wall of the vein itself; this then becomes altered, it begins to grow thicker and at the same time cloudy, and ultimately even suppuration takes place in the substance of the wall. (*Virchow*, p. 237.)

In such cases the phlebitis is obviously secondary and results from irritation engendered by the disintegrating clot.

Precisely the same metamorphosis of coagulated blood which we have seen taking place in the veins, sometimes occurs in the heart also. In the right ventricle especially, we not unfrequently see what are called purulent cysts between the trabeculæ of its walls. They project into the cavity like small rounded knobs, and form little pouches which, when cut open, are found to contain a soft pulp that may present a completely pus-like appearance. (*Virchow.*)

Billroth, however, thinks that the thrombus is sometimes transformed directly into pus. He says :—

"I have no doubt on this point. If the blood-cells in the thrombus have the power of increasing and changing to tissues, as seems most probable, there is no reason for not referring to them the formation of pus in the thrombus, just as we do to the white cells wandering out of the vessels, for the coagulation of the blood is not firm enough to entirely prevent cell-movement. That the thrombus may change to true pus by division of the white blood-cells does not appear to me disproved; we have already mentioned that this pus, which is entirely incapsulated, does not enter the circulation, or does so very rarely, and hence has no direct connection with pyæmia. To resume my experience of venous thrombi, and the history of thrombus, they are to the effect that most venous thrombi are the result of very acute inflammation of cellular tissue (especially under fasciæ, or tense skin, and in bone), and that the coagulum undergoes the same metamorphosis as the inflammatory new formation. If the latter lead to formation of tissue, the thrombi are also organized to connective tissue; if the inflammation goes on to suppuration or putrefaction, the thrombi also suppurate or putrefy and break down. This is the easier to understand, as we know, from *Von Recklinghausen's* and *Bubnoff's* investigations, that the cells from the tissue may pass through the walls of the vein into the thrombus. The walls of the vein have the same fate as the thrombus and surrounding tissue; they are infiltrated with plastic matter, and become thicker, or they suppurate." (Vide *Billroth's General Surgical Pathology and Therapeutics*, p. 324, translated by Hackley. New York, 1871.)

Again, in the case which we have just related, the walls of the thrombosed veins were found to be very much thickened. This change appears to have been due, in part at least, to contraction of their calibre, and to the imbibition of serum. On this point Mr. Callender remarks :—

> "As each coagulum is formed, it *contracts;* and it often happens, being firmly fixed by its roots, as we may term its prolongations into the small branches, that the vein-wall is drawn with it in its retraction, becoming condensed and thickened in appearance, so much so that when cut across it resembles an artery. Indeed this condition is generally mistaken for an inflammatory thickening of the vessel; but in the case of the young woman narrated at page 293 [*Holmes's Surgery*, vol. iii. 1st ed.], suspecting the nature of the change, I removed the internal saphena, which was contracted, thick, and hard like a piece of whipcord, and having injected water into a part of the vessel, easily restored that portion of the canal to its ordinary size and the vein-wall to its usual appearance, so that in the preparation it forms a marked contrast to that part of the vessel which remains condensed. Had its walls been thickened by any inflammatory deposit, they would not have yielded to the slight pressure which was employed." (See *Holmes's Surgery*, vol. iii. p. 299, 1st ed.)

But, in the foregoing case, the swelling of the coats in a part of the external iliac vein was probably due to secondary inflammation, for the walls of this vein had been perforated by ulceration and an abscess had resulted therefrom, which was filled with a brownish-coloured and very fetid purulent matter. Through this opening in the vein-wall free communication between the cavity of the abscess and the calibre of the vessel was allowed ; and thus the contents of the abscess had been stained with decomposing blood, and had acquired a brownish hue. One object to be attained by ulcerative perforation of the vein-wall, in cases such as the foregoing, may be the escape of decomposing puriform matter from its prison within the vessel, into the common connective tissue. In my opinion, the pelvic abscess described above had such an origin. I also remember another case of a similar nature. In it several small superficial abscesses presented themselves on the forearm in the track of the median vein, which I thought, at the time, to have resulted from thrombosis and puriform softening of the clot in that vein. The abscesses were treated by incisions and poultices. After some considerable time they healed and the patient recovered. Virchow also informs us that, in cases of peripheral thrombosis, an abscess may form in consequence of peri- or meso-phlebitis. By the terms meso- and periphlebitis he doubtless means inflammation occurring in the substance of the walls, and in the sheaths of, or in the connective tissue external to, the veins. Such an abscess is generally circumscribed or local in its nature, as, for example, it was in the cases mentioned above.

The clinical history of our case is also very interesting. The patient exhibited undoubted signs of blood disease before thrombosis occurred. He was very pale (*i. e.* anæmic and leucocythæmic) before any symptoms of thrombosis appeared. Certain glands which are concerned in the formation of the blood, namely, the spleen and many lymphatic ganglia, were considerably diseased. The anæmia and leucocytosis constituted the first step in his downward career. As soon as that was taken he became a fit subject for pyæmia and thrombosis. The pyæmia was quite chronic, and consisted of two paroxysms which were, in some measure, distinct from each other. Was not the last paroxysm due to a fresh infection of his system produced by the pelvic abscess? Besides these calamities the patient got parenchymatous hemorrhage when near his end. But on the last-named topic we can speak to better advantage on a future page.

The first pyæmic invasion was arthritic in character, that is, it was attended with the occurrence of pain, stiffness, soreness, and swelling in many joints. Like the rheumatic and the gouty poison, the pyæmic poison in this case exhibited a decided preference for certain structures which enter into the composition of joints. It is also probable that this attack of pyæmia began before the thrombosis started, and that the pyæmia preceded the thrombosis in this case as it did in the last. The clinical phenomena presented themselves in the following order: 1st came those relating to anæmia and leucocytosis; 2d, those belonging to pyæmia with an arthritic tendency; 3d, those referable to peripheral thrombosis; 4th, a fresh attack of pyæmia; 5th, parenchymatous hemorrhage; and 6th, death.

CASE IX. *Primary amputation of the thigh for gunshot injury; suppurative osteo-myelitis occurred in the stump-bone; death on 30th day, from pyæmia; autopsy; secondary abscess in the lungs; thrombosis of the femoral vein with puriform softening of the clot.*—Private R. W. L., Company "F," 6th Maine Vols., aged 28, of sound constitution, was wounded by firearms in battle near Fredericksburg, Va., May 3, 1863, and had his thigh primarily amputated, by the circular method, at the junction of its middle and inferior thirds, for that cause.

*May 8th.* Was brought to the Stanton U. S. Army General Hospital from the front; general condition of patient good; directed a water dressing to be applied to stump.

*11th.* Restless and complains of pain in the stump; pulse 104 and full; prescribed pulv. ipecac. comp. gr. v, et camphor. gr. j, ter in die sumend.

*15th.* Stump suppurating freely; pulse 90; tongue coated; appetite poor; bowels confined; prescribed ol. ricini f℥j, and allowed him to have milk-punch.

*21st.* Appetite continues poor; ordered to take quiniæ sulph. gr. ij, in solution, three times a day, and to continue the milk punch.

*24th.* Restless and again complains of pain in the stump; tongue coated and bowels confined; prescribed hydrarg. cum creta et pulvis rhei, āā gr. x, to be taken at once; to have milk-punch and eggs for extra diet.

*25th.* Stump pain continues, and is referred to the bone by the patient; the stump is also swelled, and the discharge from it diminished in quantity; skin tinged slightly yellow; the diagnosis of osteo-myelitis in the stump is affirmed; prescribed elixir vitriol, gtt. x, to be taken with the quinia.

*28th.* General condition better; tongue and skin moist, but bone-pain continues in stump.

*29th.* Passed a very restless night; bone-pain in stump increased, and is now very severe; has mild delirium, dyspnœa, and cough; prescribed potass. iodid. ʒj, dissolved in aqua camphoræ f℥iv, and directed a tablespoonful to be taken every six hours, together with porter, and any nutriment he may desire.

*30th.* Delirium increased; pulse rapid and feeble; granulations have sloughed off from the end of the bone in the stump, and pus is now seen oozing from the marrow there.

*31st.* Still worse; has profuse perspirations; pulse 130, quick and feeble; tongue dry and brown.

*June 2d.* Died at 6 o'clock A.M., of pyæmia.

The *autopsy* showed that the medullary tissue in the canal of the stump-bone was inflamed; that it had a dark-red colour, an increased consistence (sclerosis), and contained a large number of isolated abscesses which varied in size from a pin's head to a pea; that suppuration was also going on among the muscular structures of the stump; that the orifice at the end of the femoral vein was not closed; that the femoral vein itself was empty and considerably shrunken in calibre from the end up to the first valve; that above this valve it was filled to distension with a dirty-looking ash-colored semi-fluid substance, which resembled pus, for a considerable distance, or, in other words, that thrombosis with puriform softening was present in the femoral vein; that there were about a dozen secondary abscesses in the superficies of the lungs (both); that these pulmonary abscesses varied in size from a pea to an almond; that the kidneys appeared to be fatty, and, finally, that the liver and spleen were normal.

We shall withhold our comments on this case until the next one has been related, because they belong to the same category, and any remarks we may have to make are applicable to both alike.

CASE X. *Shell-wound of foot; secondary amputation of leg; suppurative osteo-myelitis in stump; pyæmia; death on the* 18*th day after operation; autopsy; secondary abscesses in the lungs and lobular pneumonia; veins of legs thrombosed.*—Private J. G. M., Company "L," 1st New York Artillery, aged 23, admitted to the Stanton U. S. Army General Hospital May 20, 1864, from the front, with a severe wound of the left foot; he said that the wound was inflicted on the 18th, by the explosion of a shell, in the Wilderness. On examination it was found that a large part of the heel had been torn off, and that the os calcis was much comminuted. On the 21st his leg was amputated by the double-flap method, while under sulphuric ether as an anæsthetic. He lost but little blood, and did not sustain much shock from the operation. He reacted promptly after it, and was then placed on the following plan of treatment, namely, tonics, nutrients, and alcoholic stimulants were to be administered, and simple dressings were to be applied to the stump.

He died, however, on the 8th day of June, of secondary or pyæmic pneumonia.

The *autopsy* revealed suppurative inflammation of the marrow in the stump-bones, both of them being involved; thrombosis of the veins of the legs; secondary superficial abscesses in both lungs, and lobular pneumonia.

*Comments.*—The last two cases furnish examples of thrombosis occurring in connection with suppurative osteo-myelitis. According to my own experience this disease not unfrequently leads the blood to coagulate in the veins proceeding from or corresponding to the bone or bones which happen to be its seat. I have found osteo-myelitis in all stages complicated with thrombosis at least six times in fifty-one cases, that is, in about 12 per cent. of them, and it may have been present in several more.

In both of these cases the lungs were found to contain many so-called metastatic or secondary abscesses, on post-mortem examination. Like Cases VII. and VIII. these patients died of pyæmia, but, unlike them, the secondary foci in these subjects were developed in the lungs instead of the joints or intermuscular connective tissue. In both of them the pyæmic poison seems to have had a special affinity for some substance which enters into the composition of the pulmonary tissue, and, in consequence thereof, gave rise to numerous intralobular inflammations in the lungs, instead of exciting the inflammatory process in other structures of the body. It may, however, be said in objection to this hypothesis that the secondary abscesses of the lungs which were found in at least one of these cases, namely, Case IX., may have resulted from embolism of the pulmonary artery, the embolia having come from the softening thrombi which were found in the femoral and iliac veins in that case. Well, it is possible that these abscesses did result from this cause, but it is no more probable that they were produced in this way than that they were produced by the direct action of the pyæmic poison on the pulmonary tissue; for, in the case next to be related, it will be found that, although the lungs contained many secondary abscesses, they could not have been produced by embolia derived from softening thrombi, because the thrombi were all quite recent and freshly formed, *i. e.*, not softened, and the pulmonary lesion was obviously of an older date than the thrombosis. If in the latter case the secondary abscesses in the lungs were not due to embolism of the pulmonary artery, they certainly may not have been due to that cause in the former case, although the femoral and external iliac veins did contain softening thrombi. According to my own experience, the relation which exists between secondary foci in the lungs and the phenomena of pyæmia in general on the one hand, and thrombosis on the other, is neither constant nor uniform, but only accidental, and therefore we ought not to look for the proximate causes of pyæmia in that direction. We shall, however, take up and more fully consider this important topic at another time.

CASE XI. *Secondary amputation of thigh for gunshot injury of knee-joint: death from pyæmia* 13 *days after operation: autopsy; gangrenous osteo-myelitis of stump; recent thrombosis of profunda, superficial femoral, and external iliac veins: extensive adenitis in same parts: numerous secondary abscesses found in the lungs and patches of lobular pneumonia.*—Wm. L. S., private, Company "I," 5th North Carolina Infantry (Confederate), aged 24, was admitted into the Stanton U. S. Army General Hospital May 13, 1864, with a gunshot wound of the left knee-joint, received May 9, in battle near the Wilderness, Va. The ball entered anteriorly near the inner side of the patella, and escaped posteriorly about three inches below the bend of the knee, having grooved the internal condyle of the femur in its course.

At time of admission to hospital the knee-joint was already much swelled and inflamed. His constitutional state was also bad. He was pale (anæmic), feeble, and had irritative fever of a low type. Ordered the ice-dressing to be applied to the wounded joint, and nutrients, together with tonics and stimulants, to be administered internally. The following tonic and stimulating mixture was prescribed: ℞. Tinct. ferri muriat. f℥ij; spiritus frumenti, fOj. M. One ounce to be taken every three hours.

*May* 18*th.* Has not improved, but, on the contrary, is constantly getting worse. His knee-joint is greatly swelled and very painful. The inflammatory swelling is rapidly extending down his leg. Has a good deal of irritative fever; skin hot and dry; pulse frequent and irritable; he is considerably prostrated and very restless. Anæsthesia having been produced with sulphuric ether, the thigh was amputated in its lower third by the double-flap method. Only about four ounces of blood were shed by the operation. A good deal of shock, however, was produced by the operation, and reaction came on but slowly. When the effects of the anæsthetic had passed away, the following mixture was prescribed: ℞. Ferri et quiniæ citratis, ℥iss; spiritus frumenti, fOj. M. One ounce to be administered every three hours. He was also directed to take opiates in sufficient quantity to keep him free from pain, and to have his strength sustained with nutrients, such as essence of beef, eggs, etc. The knee-joint contained about six ounces of purulent fluid.

26*th.* There is no improvement; stump shows no disposition to heal; he has anorexia with great debility; and we are compelled to administer alcoholic stimulants in any form that may suit his fancy; he is restless and expresses a desire to die; mind clear; pulse averages 130; tongue dry; stomach irritable. The stump-bone protrudes and the discharge is ill-conditioned. Ordered the following lotion to be applied to his stump: ℞. Potass. permanganat. ℥iv; aquæ fontanæ, fOij. M. During the next three days he continued to grow steadily weaker.

30*th.* Is sinking rapidly; has considerable dyspnœa and the respirations are hurried; the discharge from the stump is very offensive in smell; he refuses to take food and stimulants in any form.

31*st.* He continued to sink, and died to-day of pyæmia. He did not have any chills, and his skin did not acquire an icterode hue. In these respects his case differs from most other instances of pyæmia with secondary foci which have come under my observation.

*Autopsy.*—The lower end of the stump-bone was denuded of periosteum for about half an inch above its sawn extremity; and this membrane, still higher up, was loosened more or less for the space of an inch, but not detached. There were no deposits of new osseous tissue on the exterior of the stump-bone, and no products of reparative action at the sawn end of it. The medullary tissue in the canal of the stump-bone had a dark, reddish-brown colour, and a very offensive gangrenous odour, through a section about half an inch thick situated at the lower end. Above this gangrenous part the marrow presented centrally a yellowish-gray colour through a space one inch in length. At the circumference of this yellowish-gray part, the medullary tissue which lay in contact with the internal laminæ of the bone had a dark-red colour, extending to the depth of one or two lines. Above this yellowish-gray part the marrow presented a reddish-yellow colour in its interior, but its exterior, which came in contact with the osseous tube, had a bright-red colour extending to the depth of two or three lines, and looked like fresh granulations; from this "red inflamed" tissue numerous minute vessels were seen shooting into the interior of the marrow and forming networks therein. A section of the stump-bone four inches long was examined. The medullary tissue was exposed to view by splitting it lengthwise with a saw.

The profunda, the superficial femoral, and the external iliac veins, leading from the stump, were all filled with recently coagulated blood, *i. e.*, with a fresh thrombus. When viewed externally, after exposure by dissection, they presented a dark-blue colour, and, opposite their valves, a knotted appearance.

The lymphatic glands of the groin on that side, and the chain of lymphatic ganglia which accompanies the external iliac vein, were much enlarged in consequence of inflammation.

The end of the femoral artery in the stump was slate-coloured and softened to the extent of one inch, and this part appeared about to slough off. The tube was, however, firmly occluded or obliterated at the junction of the sloughing with the sound part of the vessel.

The exterior of the lungs contained about a dozen small superficial abscesses, and the interior numerous patches of lobular pneumonia. The abscesses were grayish-yellow in colour, and surrounded by a dark-red areola of inflamed pulmonary tissue.

The liver was not enlarged, but buff-coloured, fatty, and very soft. The spleen also was not enlarged, but paler than usual in colour and very soft. The cortical portion of the kidneys was red and injected. The pyramids were pale but well defined.

*Comments.*—In this case secondary amputation of the thigh was followed by pyæmia, which in turn occasioned death. At the autopsy many secondary abscesses were found on the exterior of the lungs, and numerous patches of lobular pneumonia in their interior. The veins of the amputated thigh and groin were shown to be filled with freshly clotted blood, and the stump-bone to be the seat of gangrenous osteo-myelitis. But the morbid process in the lungs was obviously of an older date than the morbid process in the veins. The formation of the secondary abscesses in the lungs doubtless commenced several days before death, while the blood coagulated in the veins during the last few hours of life. The production of the secondary abscesses in the lungs, therefore, cannot be ascribed to thrombosis, and to account for their origin we are compelled to invoke the hypothesis that they were occasioned by the pyæmia, *i. e.*, by some morbid influence of a peculiar character which the pyæmic poison exerts upon the pulmonary tissue. Most certainly the pyæmic phenomena which presented themselves in the case, as also the secondary abscesses and the lobular pneumonia, cannot justly be attributed to the thrombosis, but, instead thereof, the formation of coagula in the veins may, at least to some extent, be ascribed with propriety to the influence of the pyæmia itself.

Concerning the gangrenous feature of the osteo-myelitis which was observed in this case, all we need say here is that the medullitis did not become gangrenous until near the close of life, that the pyæmia was much older than the gangrene, that the secondary abscesses in the lungs were also older than the gangrene, that neither the pyæmia nor the pulmonary abscesses were induced by the gangrene, and that the gangrene itself was probably occasioned by the debilitated state of the patient and the poisoned condition of his blood.

With regard to the morbid state of the blood which obtained in this case, we should bear in mind while attempting to account for it, that the spleen and many of the lymphatic glands were seriously disordered; that in all probability much leucocythæmia had been produced by the disease of these glands before the thrombosis began, and that the thrombosis itself may have been largely due to the leucocythæmia.

Besides this case, the writer has seen several others, in which pyæmia with secondary abscesses in the lungs became complicated with thrombosis of the veins proceeding from the wounded part, just before death occurred, and therefore the foregoing case must not be considered as an isolated one in this respect.

Case XII. *Primary amputation of right leg at upper third for gunshot injury; suppurative osteo-myelitis of stump; pyarthrosis of knee; thrombosis of the crural veins with parenchymatous hemorrhage from the stump on the* 12*th day; death from pyæmia on the* 15*th day; autopsy; diagnosis as to the cause of the hemorrhage, etc., verified.*—Private J. H., Co. "A," 32d Massachusetts Vols., aged 49, was admitted to the Stanton U. S. Army General Hospital from the field, May 18, 1864. His right leg had been amputated, about four inches below the knee-joint, by the antero-posterior flap method. He stated that the operation was performed on the 12th, for gunshot fracture of both bones of the leg, with much destruction of the soft parts, which had occurred in the battle of the Wilderness on the 11th. He also stated that he was in good health at the time of operation.

*May* 20. He had retention of urine. Stump swollen and painful. It also had sloughed badly up to where the bones were sawed off.

22*d.* Thigh also now swelled and painful. Pulse frequent and feeble; skin hot, tongue dry and brown; he is much debilitated; has also diarrhœa and pyæmic chills.

23*d.* Parenchymatous hemorrhage occurred from the stump, and he lost about six ounces of blood before it was arrested. He is still more debilitated. He sweats profusely, and has rigours occurring at irregular periods. His skin is assuming a sallow hue. The superficial veins of the swollen thigh are enlarged, blue-coloured, and unusually distinct, from which it is inferred, in connection with the other features of his case, that the femoral and popliteal veins are obstructed by thrombus. He died on the 26th, of exhaustion induced by pyæmia.

*Autopsy.*—The post-mortem examination of the limb confirmed the diagnosis. The medullary tissue of the principal stump-bone (tibia) was inflamed and suppurating. The cancelli of the spongy structure of the upper end or head of the tibia contained some dirty-looking, ill-conditioned pus. The knee-joint contained about four ounces of fetid pus. The internal organs or viscera were not examined.

*Comments.*—Not long after the operation this man's general health began to suffer. He felt weak and lost his appetite. He grew worse; soon the flaps began to slough and he was seized with irritative fever. Then the symptoms of pyæmia quickly appeared, and afterwards the phenomena of thrombosis. The clinical history of this case clearly shows that of these affections pyæmia was the primitive one. The clinical history also shows that the thrombosis was preceded by serious disorder of the blood.

Furthermore, the thrombosis gave rise to the following symptoms, namely, œdematous swelling of the stump and thigh, dilatation of the subcutaneous veins of these parts (they appeared enlarged, blue-coloured, and unusually distinct), and parenchymatous hemorrhage. These symptoms all resulted from the deep-seated veins of the thigh and ham having become plugged up with clotted blood. These symptoms were so well marked that an opinion was easily formed as to the nature of the lesion which had produced them, and the diagnosis was fully confirmed by the autopsy.

The parenchymatous bleeding which occurred in this case, and likewise in Case VIII., constitutes, when present, a very important sign of thrombosis. On this point Stromeyer remarks: "The parenchymatous hemorrhages are, as I have found, and will elsewhere prove by facts, at once a symptom of the entrance of pus into the veins and of the stoppage of the larger veins by coagulation. The stagnation of blood thereby ensuing gives rise to hemorrhage from the capillary vessels lying free in the wound, and on this account the blood so lost has neither a decidedly venous nor arterial character. Nevertheless, I will not assert that parenchymatous hemorrhages, independent of stagnation in the veins, and similar to scorbutic bleedings, are not met with from the surface of wounds. (Vide *Statham's Stromeyer*, p. 15, Am. ed.) When, however, Stromeyer supposed that pus entered the veins from suppurating wounds, he was mistaken, for we now know that pus is never absorbed in the form of pus; but he was correct in ascribing parenchymatous hemorrhage to occlusion of the main veins with coagulated blood; and, although this is not the only form of parenchymatous bleeding, it is the one which occurs most frequently, and possesses most importance. Oftentimes it gives the surgeon much trouble to restrain it, and not unfrequently it causes so great a loss of blood as to prove fatal. Several cases of this sort have been seen by the writer, but he defers the relation of them to another occasion. In parenchymatous hemorrhage the blood issues from the bleeding surface, by exudation, as it were, and not in distinct streams. In colour it is not so dark as venous, nor so bright as arterial blood. This circumstance also was first pointed out by Stromeyer, as mentioned above.

CASE XIII. *Gunshot fracture of right humerus; excision of the fragments: convalescence very slow; the whole limb much tumefied with a peculiar white œdematous swelling for a long time: thrombosis extending to the axillary vein in all probability occurred, and thus seriously complicated the original lesion.*—J. E., 2d Lieutenant Co. "C," 2d U. S. Calvary, aged 27; admitted June 4, 1864, into the Stanton U. S. Army General Hospital; was wounded in the battle of Coal Harbor, Virginia, June 1st, by a conoidal bullet which entered the anterior surface of his right arm, about the junction of its upper and middle thirds, fractured the humerus with comminution and lodged beneath the integuments on the opposite side of the limb. He was taken to a field hospital and operated on the same day. An incision about four inches in length was made along the outer border of the biceps muscle, and several large fragments of bone, together with the ball, were said to have been extracted. His general condition was excellent.

On admission to hospital the sutures were removed and the wound of operation explored. The ends of the fractured shaft were found to be rough, and about three inches apart. The limb was then placed in a comfortable position on a well-padded angular splint, and the patient was ordered to keep his bed. Ice-dressings were applied to the wound, saline cathartics administered from time to time as the condition of his bowels indicated, for they were generally confined, and stimulants with a nourishing diet allowed. On this plan of treatment the wound did well, *i. e.* it discharged a cream-like pus, and was granulating satisfactorily until the last of June, when it began to slough. At the same time he lost his appetite, then got irritative fever, and failed rapidly. The treatment consisted in the administration of stimulants, tonics, nutrients, and opium internally, and the application of strong nitric acid to the sloughing surface. When the phagedæna ceased to spread, the sore occupied a space some five inches in length by three in breadth. It was now dressed with a weak solution of the permanganate of potassa. Constipation continued to be a prominent symptom, and enemata were usually employed to relieve it. By the second week in July the slough had all separated, and the sore presented a pale-red, flabby, granulating surface. The hand, forearm, and arm were extensively involved in swelling of an œdematous nature, and presented a peculiar white, semi-transparent, or wax-like appearance. The tumefaction was very great, and extended up to the shoulder, so great, indeed, that the limb was fully twice as large as natural. This swelling was attributed to thrombosis, and the veins of the arm, together with the axillary vein, were believed to be extensively obstructed with coagula. He was emaciated, and his countenance was very pale or anæmic. The swelling showed but little inclination to subside, and the wound but little disposition to heal. No other part of his body, however, was tumefied or showed signs of local disease.

During this stage, the pus showed a marked tendency to burrow among the muscles about the wound, and, at different times, several abscesses presented themselves on the outer side of the arm. They were promptly emptied by incision. The supporting plan of treatment was continued, and unguentum resinæ on lint was applied to the sore as a dressing. His appetite improved, and his general condition became much better under this treatment, but the limb remained much distended with the œdematous infiltration above described, the sore much paler than natural, the granulations weak, the edges puffed up with œdema, and requiring frequent scarification on that account.

*October* 14. He continues slowly to improve. The lower three-fourths of the sore are now healed. A narrow sinus which communicates with the bone at the place of fracture discharges a laudable pus. The tumefaction of the limb is greatly reduced, but there is still considerable œdematous swelling in every part of it, and especially in the forearm and hand, although more than three months have elapsed since thrombosis occurred. He has but little or no pain, and has not had much of it at any time.

28*th*. The arm is now improving more rapidly, but the œdematous swelling has not yet entirely disappeared. His general condition is also much better.

At this point in the history of this very interesting case the writer was transferred to another sphere of duty, and thus lost sight of his conclusion. It is, however, believed that the patient ultimately recovered.

*Comments.*—This officer seemed likely to make a speedy recovery until his wound was attacked with phagedæna, although his countenance was beginning to assume an anæmic or leucocythæmic appearance. The phagedæna first showed itself about three weeks after he was wounded; and about two weeks later still the symptoms of thrombosis appeared. These symptoms consisted essentially of a peculiar tumefaction, involving the wounded limb, which could not be satisfactorily accounted for by any hypothesis, except that its veins were obstructed with coagula. It is probable that these coagula had their starting-point in some of the minute veins connected with the sloughing part, and that they afterwards prolonged themselves upwards into the large veins, by a process which we have described with sufficient fulness on another page. It is worthy of particular remark, that thrombosis did not occur until his condition had become decidedly anæmic or leucocythæmic, and until his wound had been attacked with phagedæna.

Again, the deleterious influence which the thrombosis exerted upon this patient's recovery was about as strongly marked as the symptoms themselves which it produced. While the œdematous tumefaction persisted, his wound was very slow to heal, and thus his recovery was greatly retarded. Moreover, his convalescence was rendered not only very tedious, in consequence of the thrombosis, but also full of danger. For a long time he looked very pale, almost bloodless, and remained very weak. For a long time, we every morning expected to find him attacked with pyæmia, and the last hope of saving his life destroyed.

CASE XIV. *Gunshot fracture of right thigh near junction of upper and middle thirds; bullet lodged; some time afterwards œdematous swelling with painful sensations, phlegmasia alba dolens, occurred in* *that limb: it was doubtless occasioned by thrombosis of the femoral vein and its tributaries: the patient slowly recovered.*—Private H. S., Company "I," 5th New Jersey Vols., æt. 19, was wounded in battle at Chancellorsville, May 3, 1863, by small arms, sustaining thereby a compound comminuted fracture of the right femur, near the junction of its upper and middle thirds. The bullet entered the thigh from behind and just below the gluteal fold. There was no orifice of exit. He was treated in the Field Hospital at Potomac Creek until June 15, when that place was evacuated. He was then brought to the Stanton U. S. Army General Hospital on a bed, the injured limb being propped up or held steady with a long sand-bag placed on each side of it. The fracture had already united by a soft callus. It was also discovered that the lower end of the upper fragment was tilted forwards by the action of the psoas magnus and iliacus internus muscles so as to form an obtuse angle with the lower fragment at the place of fracture. The wound was still suppurating, and the bullet not extracted. Treatment: The limb was placed in Hodgen's cradle-splint, water-dressings applied to the wound, and a full diet with porter allowed.

*July* 15. Wound is still open and suppurating. He complains of pain in the foot; also of numbness in the leg, and the circulation in these parts is considerably embarrassed. The blood stagnates in the whole limb, but especially in the lower part of it, and there is much swelling of a white, watery, or œdematous appearance extending from the toes up to the groin.

*20th.* Pain in foot and œdematous tumefaction of limb remain the same, but there is total loss of sensibility in dorsal surface of foot. Pulsation in the anterior tibial artery is normal, but it can scarcely be felt in the posterior tibial artery, possibly on account of the swelling. The temperature of the foot is good. He is quite pale (anæmic) and rather weak, but otherwise his general health is good. The limb was taken out of Hodgen's apparatus to-day, and a starch bandage applied so as to enable him to leave his bed.

*23d.* Pain and swelling continue unchanged. He complains of loss of appetite and a feeling of malaise. Prescribed quinia sulph. gr. ij, elixir vitriol, gtts. x, ter in die sumend.; also spiritus frumenti, f℥viij, quotidie.

*28th.* General condition improved; fracture firmly united.

*Aug.* 1. Goes about on crutches, but the swelling of the limb continues undiminished.

*Sept.* 8. The bullet (a conical one) was discharged from the aperture of entrance by suppuration to-day; condition of foot about the same; œdematous swelling of limb slowly abating. His general health is now good, and he has fair use of the member. Amount of shortening 3¼ inches.

*25th.* He received a furlough for sixty days. The wound is now completely healed, but the swelling is not yet entirely gone. The other limb has not at any time been swelled.

*Jan.* 10, 1864. He was discharged from the service on surgeon's certificate of disability. At that time he walked pretty well with the aid of a cane. No fragments of bone were discharged while he was in the general hospital.

*Comments.*—This patient did not get an œdematous swelling of his broken limb, which was of high degree and extended from toes to groin, until his strength had become much diminished, his countenance pallid, and his condition decidedly anæmic. Thus, in this case also we find that the thrombosis was preceded by a disordered state of the blood itself; and this circumstance is important, because it aids in clinically demonstrating that thrombosis never occurs when the blood is in a healthy state.

Moreover, the obstruction of the femoral vein and its tributaries with coagula caused the cure of this patient to be much delayed.

CASE XV. *Simple fracture of right femur in middle third; union with five-eighths of an inch shortening; subsequently, however, the shortening increased very much from the operation of constitutional causes; ulceration with extensive and persistent œdema of the leg occurred; thrombosis believed to have been present.*—Private T. S., Co. "A," 1st Regt. Maryland Artillery, aged 30, admitted to Stanton U. S. Army General Hospital, September 25, 1863. He had received a simple oblique fracture of the right femur in its middle third, by being thrown from his horse three days previous, Sept. 22, in action near Madison C. H., Va. He was treated by counter-extension, made with a perineal band, and extension with a pulley-weight and cord, the latter being attached to the limb by suitable strips of adhesive plaster, applied to and extending up the leg.

*Nov.* 15. The fracture has united firmly, with very little shortening ($\frac{5}{8}$ of an inch).

*Dec.* 28. Left the hospital on furlough, for sixty days.

*Feb.* 28, 1864. Returned from furlough in bad condition. States that, about four weeks after reaching home, he noticed several small sores, or ulcers, on his right leg; that, soon afterwards, his right foot and ankle began to swell; that the swelling (œdema) gradually increased and spread upward till it reached the knee. It also appears that, at the same time, the affected limb gradually became shortened, from softening and absorption of the provisional callus. When he returned to hospital, Feb. 28, as mentioned above, this limb was found, by careful measurement, to be $2\frac{3}{4}$ inches shorter than the sound one. The union, however, appeared to be firm. There were five scorbutic-looking ulcers on the leg, and numerous spots having the appearance of purpura. The limb was swollen and œdematous as high as the knee. His gums were pale, spongy, ragged, and detached from the teeth. There was a copious deposit of black material on the teeth. His skin had a "muddy" hue, and he complained of vague pains in different parts of the body, but especially in the back.

*Treatment.*—On account of the swelling and ulceration of the leg, no attempt could be made to lengthen the limb by applying extension. He was placed on a full diet, with a liberal allowance of fresh vegetables, and the chlorate of potassa was administered in full doses. Under this treatment his general condition readily improved. The œdematous swelling of his leg, however, was very slow to yield. The ulcers also were very slow to take on reparative action. No tumefaction occurred in the other limb.

*May* 3. He was transferred to Philadelphia, Pa., doing well, but considerable swelling of an œdematous character still remained in his leg, and the ulcers were not yet soundly healed. For a part of the notes relating to this case I am indebted to Dr. George A. Mursick, late Assistant Surgeon U. S. Vols.

*Comments.*—The peculiar and persistent tumefaction which occurred in his right foot and leg, and in no other part, makes it pretty certain that the corresponding crural vein and the tributaries thereof were obstructed with thrombi. This swelling was obviously due to some local cause; and we are not acquainted with any besides the one just mentioned, or thrombosis, that is capable of accounting for all the phenomena which this swelling presented. According to the patient's statement, as to his symptoms, the thrombosis occurred early in February, 1864, more than four months after he was injured, and more than one month after he left the hospital on furlough.

Again, it is by no means certain that this man had scurvy. His gums were not dark-colored, but pale; they did not bleed when touched, and on other slight provocation, while the ulcers and purpuric spots on his right leg can be accounted for on the thrombus hypothesis. He was undoubtedly suffering from chronic malarial intoxication. Nearly all the soldiers in the Army of the Potomac, and especially those of them who saw much service in the field, suffered from malarial poisoning, some proving much more susceptible than others to the subtle influence of so-called marsh miasm. From the disturbing influence exerted by malaria on the spleen and other blood-glands, the white corpuscles, together with the pigment matter, were considerably increased, and he acquired a peculiar form of anæmia, or, speaking more exactly, of leucocythæmia, which fully accounts for the muddy hue of his skin. The disordered state of the blood thus acquired accounts also for the softening of the povisional callus, with the shortening of the limb that followed it, and for the occurrence of crural thrombosis.

CASE XVI. *Thrombosis of the veins of the hand and wrist, complicating the treatment of a "silver-fork" fracture of the left radius: recovery.*—Mrs. L., a tall, well-formed, healthy-looking widow, aged about 58 years, and by occupation a dressmaker, slipped on the ice and fell down, on the morning of Dec. 24, 1870. She struck the ground with the palm of her left hand, and sustained thereby a fracture in the lower part of the radius, near the wrist-joint. She came to me almost immediately afterwards. The deformity which characterizes "Colles's fracture" was present in a marked degree; also, crepitus and an abnormal point of motion were detected in the lower end of the radius, on close examination. Her fracture was reduced forthwith and splints applied in accordance with what is known as the Bellevue Hospital plan. An accurate coaptation of the fragments was obtained, and she did remarkably well until January 19, 1871.

On the morning of that day she came to me with her hand greatly swollen, and presenting a white, dropsical, or œdematous appearance. On removing the fracture dressings, I found that the tumefaction was confined to the hand and wrist; that the forearm and arm were entirely free from it, that the swelling was not only great in quantity, but also very painful in character; that it likewise seemed to be rather warmer than natural to the touch, and that its appearance was entirely œdematous or like that of a local anasarca. In short, the exceedingly painful œdema of true phlegmasia alba dolens had attacked her hand and wrist. It had come on suddenly during the preceding night, and deprived her of sleep, she said. The dressings were readjusted, but not tightly, an anodyne lotion was applied to her hand, and we resolved to await the course of events. On the 23d the dressings were again adjusted, and her hand was painted with tincture of iodine. On the 28th the splints were removed entirely. The phlegmasia alba dolens of her wrist continued about the same.

This swelling was not immediately due to compression of the limb, nor to any interruption of the circulation of the blood which resulted directly from the snugness of the dressings, because they were no tighter than they had been all the while before the swelling appeared. Moreover, the swelling did not subside, nor, indeed, did it sensibly diminish in quantity, on the removal of the splints. It lasted for a long time afterwards, and but gradually disappeared. Thus the thrombosis proved to be a painful and otherwise troublesome complication of the original injury.

So far as the fracture was concerned, the result was very good, for union was obtained without the concurrence of any deformity that could be perceived.

62 East 12th Street, July 10th, 1872.

---

## ART. III.—*Successful Treatment of Asthma.* By EDGAR HOLDEN, M.D., of Newark, N. J.

THAT man is indeed presumptuous who in the present advanced state of medical science dares to advance a theory or propose a remedy without facts to support his conclusions, and it is with respectful deference to the many eminent men who have written upon or personally suffered from asthma, the affliction to which Willis justly applied the term *morbus maxime terribilis*, that I present the following remarks. The theory touched upon is, however, not a new one, and the remedy, although perhaps never before systematically applied in this disease, is not an untried or unfamiliar one.

It is a matter of painful curiosity to read over the long list of remedies and the many theories that have been advanced concerning asthma, even since the days of Sir John Floyer, who himself suffered for 30 years, and died at the advanced age of 80, and to observe in how narrow a circle run the limited means that have brought relief. Only one really marked discovery seems to have occurred for centuries in its history, and this its tetanoid character and the actual location of spasm in the muscular structure of the bronchiæ by Willis, and the demonstration of the circular fibres themselves by Reisseissen. (*Ueber den Bau der Lungen*, Berlin, 1822.)

Its frequently reflex character is, however, sometimes referred to in old writings, but the discovery of the actual nature of the disease and the definite certainty that in every case of true asthma an actual spastic contraction does exist, has been the source of all the relief that has thus far come to the tortured asthmatic, since, while it may not as yet have been followed by the discovery of the remedy that could be called a specific, yet it has determined the *class* of remedies from which relief could be probably obtained, and, with the light afforded by the modern discoveries of reflex and inhibitory nerve functions, has already given a key to successful treatment.

It is most generally conceded that whatever be the precise character of the attack, whether due to direct or reflex irritation, the essence of the affection is *spasm*, and although there may be, at rare intervals, cases dependent upon a minus rather than a plus state of contractility (Walshe) of the muscular fibres of the bronchiæ, such cases, admitted because of high authority, are but the exceptions that strengthen and support the rule. This characteristic feature of true asthma is most lucidly described by Jones (*Nervous Disease*, p. 396), as a tetanoid condition of the motor nerves of the bronchial tubules, the centres excited being rather those of the spinal than the encephalic district.

With an affection thus clearly defined, adaptation of remedies from the wide field of the materia medica would appear a simple task; but unfortunately individual idiosyncracy has proved a greater obstacle in this than in any other known disease, and the remedy that transports one to the seventh heaven by its almost miraculous powers fails to relieve another or casts him to a corresponding depth of misery.

Nor is this appearance of difference in action due to any simple confounding of cases alone, although it is probably true that no form of dyspnœa has escaped the title, and suffocative bronchitis, cardiac disease, and a variety of affections accompanied or characterized by dyspnœa are not infrequently huddled into a common group, and classified and treated by the hurried practitioner of medicine as asthma. It is undoubtedly the case, that this confounding of different affections under a common name, has done much to discourage the conscientious student and to establish the reputation of the disease for intractability; still the disease, *par excellence*, true asthma, rarely has proven the same as respects the influence of remedies, in any two individuals. Were this not the case, the discovery of its nature would have been the key to successful treatment. The fact, alone, that learned men have exhausted effort and failed even to gain for themselves relief, is evidence sufficient that science has been but a barren field. Floyer, Bean, Bree, and the late lamented Trousseau were its victims.

Even, however, to relieve some of the many who suffer, and to establish, as has been successfully done by W. T. Gairdner (*Edin. Month. Med. Journ.*, 1851) and H. H. Salter, hygienic rules by which attacks may be warded off and prevented, is an achievment deserving the most grateful appreciation.

It is curious and instructive to review the list of remedies that have obtained some degree of prominence during the past one hundred years, and, as the treatment hereinafter proposed is more or less connected with some of them, a brief reference may be pardoned.

Thus, to make our selection in somewhat desultory and promiscuous manner:—

According to Eberle (Therapeutics), cobweb, in doses of 5 to 20 grains, was lauded as wonderfully successful, and a case thus treated is recorded in the *N. E. Med. Journal*, vol. iv. p. 218, by Dr. Webster, of Boston. It is said to have produced a species of tranquil exhilaration similar to that following the exhibition of nitrous oxide gas.

Dr. Jackson, of Boston, also details a case relieved entirely by a dose of 20 grains, by which the first tranquil sleep for six years was produced.

Narcotics, sedatives, and anæsthetics have naturally attained a prominent place in a disease so evidently indicating these classes of remedies, yet, with the exception of coffee and stramonium (both datura and tatula), conium, hydrocyanic acid, ether and chloroform, most of them have fallen into deserved disrepute.

Of antispasmodics and emetics, the former class, including musk, camphor, castor, valerian, *et id omne genus*, most have fallen far below expectations, and, but that the accepted theory of the affection were established, their lamentable failure would be most damaging to the faith of its supporters. With regard to emetics, relief has probably occurred to a greater number of sufferers from their use than from all other sources, and Dr. Salter, after an extended observation and experience, has in his later writings, given a high place to one above all others, viz., ipecac., tobacco and tartar emetic standing next in order.

Prof. Kuhn, of Philadelphia, advocated sulphate of zinc as an emetic, believing it to possess antispasmodic properties, an opinion not, however, subsequently concurred in by writers. Among tonics and alteratives may perhaps be most properly classed arsenic (Troussean), strychnia, and cinchona (Niemeyer), as having become prominent amidst the many hitherto employed, and which have both outstripped and outlived the rest.

Dr. Bree lauded nitric acid and scilla; M. Beau sulphuret of potassium baths (86°F.), of twenty minutes' duration, both to relieve and prevent recurrence. (*Journ. de Méd. et Chir. pratique*, vol. xxxiii. p. 440.)

In Germany a remedy is said to be now much in vogue, made by dissolving sal ammoniac in lemonade. A combination of belladonna and iodide of potassium is variously attributed to Professor Niemeyer and Dr. Salter.

Galvanism has been employed and advocated occasionally, and Dr. Wilson, of Philadelphia, in 1816, presented to the Royal Society of London an elaborate essay on its use. Subsequent experiments have, however, shown it to be useless, and Prof. Salter says of it, "I have known it to do great harm, to 'aggravate the spasm,' and I have never known it to do any good."

Iodide of potassium in large doses and long continued has certainly proved of great value in eradicating the peculiar dyscrasia upon which the tetanoid contractility appears to depend.

Dracontium fœtidum may also be drawn from the olla podriga of remedies, as deserving more than its probable inheritance of oblivion, and the following prescription of Trousseau is worthy of record, though hardly commending itself for simplicity.

For ten days small doses of belladonna, frequently repeated; then ten days of turpentine; then ten of arsenical cigarettes, with sixty-grain doses of calisaya bark in coffee every ten days.

Of *external applications* that have survived the brief days of discovery and experiment, revulsives to the cervical spine over the part corresponding to the pharyngeal plexus, and first proposed by M. Ducros, of Marseilles, appear to have been the most satisfactory. It is probably to this gentleman, whose essay was read before the Academy of Science, in Paris, that the expedient of touching the fauces with aqua ammonia is due, rather than, as is commonly supposed, to Trousseau, who subsequently practised and endorsed it.

Finally, however, and chiefly, came the remedies used by inhalation, and from which much has been expected and much obtained.

First, perhaps, leaving the anæsthetics, ether and chloroform, as having been already referred to, stands the smoke of stramonium, with or without tobacco and nitre paper. Of this latter and the secret of its action more will be said hereafter.

With the action of both these substances the profession is most familiar, and, indeed, few asthmatics have occasion to be advised with regard to them by any physician, to such an extent has a measurable success rendered them popular. Of more recent date is the use of compressed air, highly lauded by Prof. Niemeyer, and of which a writer (Sandahl) in *Schmidt's Jahrbuch* says, "the effects are a slowing of pulse and of respiration, a diminution of amount of pulmonary and cutaneous exhalation, also, with increase of urinary secretion and relief of congestion." Out of fourteen cases, all were improved, twelve had no relapse; and of seventy-seven with complicating emphysema and bronchitis, fifty-seven were improved, and twenty doubtful. (vol. cxx. p. 178.)

From this remedy, however, little can be expected, inasmuch as it is only claimed that relief is afforded during a paroxysm, and the subsequent symptoms are in no wise mitigated or another attack at the usual hour averted.

It is, moreover, not readily available. The remedy was probably first suggested by Dr. Gent, in 1869 (*Arch. Gén. de Méd.*). Oxygen, hydrogen, and chlorine gases have enjoyed also a flattering reputation, only to fall into disuse.

Singular as it may seem, while almost every known medicinal substance has been called upon to do duty for this terrible affection, nitrogen, to which I desire to call the attention of the profession, seems to have been overlooked, and there appears no record of experiment with it, or its protoxide (nitrous oxide), and nitrous oxide saturated with medicinal vapors, as of conium or Calabar bean. Is it not a little curious to observe how this element enters into the composition of the means that usually relieve? For example, in an ordinary nitrogenized atmosphere, even when tainted with the additional odours of putrefaction—in the fumes from burning nitrate of potassa, in the vapours of nitrite of amyl or nitrous ether; and though, in view of the powerful influence of the active principle of the substance, it may be a far-fetched deduction, it is nevertheless a singular fact that coffee, which will often completely relieve a paroxysm of asthma, does so only when taken in such a manner that its nitrogenous element, the legumen, is received in largest quantity. That this element, not usually an appreciated one in the beverage as we daily use it, is yet in reality one in condition to be readily assimilated, may be inferred from the fact that in Central Asia (*Organic Chem.*, W. A. Miller), where animal food is rare, coffee is used as asthmatics use it, and the nitrogenous constituents are found to be a substitute for those of a flesh diet. In tea, however, which we are accustomed to consider so similar to coffee from the analogy in the active principle of each, but which does not relieve asthma, the nitrogenous element remains in the leaves and is thrown away. Even were this not the case, however, the element is here more analogous to casein than that of coffee, and less digestible.

How far a purely nitrogenous diet would go to alleviate the paroxysm of asthma has probably never been ascertained, and would, indeed, be likely to fail, because provocative of indigestion, the most common excitant of a paroxysm.

Herein is also the explanation of a singular paradox with reference to coffee. In many cases, nothing seems more certainly to produce a paroxysm than this same beverage, yet it will always be found that when it does so the stomach is full of food difficult of digestion, and rendered simply more so by the coffee. Upon an empty stomach and in saturated infusion or in substance, it gives relief.

With reference to nitrite of amyl, which has recently attracted attention as *the* remedy for angina pectoris, and also from its singular properties as a remedy for asthma, much might be said.

(It is not intimated that the fact of its being a nitrite is the *sole* secret of its power, since, as Dr. Richardson has shown, other substances of the amyl series produce like results, particularly the iodide. The acetate and hydruret also possess similar properties.)

As it (the nitrite) is as yet a new remedy, comparatively little is known with regard to its action in asthma. In the few cases in my own experience in which it has been tried, it has seemed to be somewhat dangerous, as liable to excite congestion of viscera, more painful, and certainly more dangerous, than the disease itself.

Where any apoplectic or hemorrhagic tendency exists, its use would be clearly contra-indicated, and, although it undoubtedly resolves the spasmodic constriction of the bronchiæ, yet, as it renders turgid and swollen the capillaries of the body, and particularly of the brain, and checks oxidation, it should be employed with caution ; so great and almost miraculous, however, appears its action (one or two whiffs from a small vial being often sufficient to relieve), it must be yet considered an invaluable remedy. It is to nitrogen, however, but chiefly to its protoxide, that I desire to call attention. It would be a more singular fact that hitherto no systematic use appears to have been made of this gas in the treatment of an affection in which it is so clearly indicated, were it not that its apparently transitory influence seems to offer but a slight prospect of benefit, and foreign observers, to whom we must admit ourselves too often indebted for new remedies, are far less familiar with it than ourselves, and no recorded experiments have come to us from familiar quarters.

Indeed, until its introduction to the French Academy by Dr. Evans, an American dentist, at a comparatively recent date, its properties may be said to have been almost unknown to foreign medical observers. To show that its influence as an antispasmodic is not transitory, and especially that when passed through a sedative solution it will relieve the paroxysm of asthma and avert its return, with a success little influenced by individual idiosyncrasy, is the purpose of this article.

It is necessary, with this view, to revert to some of the peculiarities of the protoxide of nitrogen, as observed during an extended series of experiments, originally designed to ascertain the effect of its inhalation upon diseased lungs, and published some two years since in this Journal. Patients about to inhale the gas for extraction of teeth at the rooms of a prominent dentist, were examined indiscriminately before, during, and after the exhibition, and among these one peculiarity was found to be invariable, viz., in lungs however healthy, when the venous stasis had so far blocked up the pulmonary capillaries that the vesicular murmur was almost indistinguishable, the respiratory sounds, which had been growing gradually more and more sibilant and suggestive of a tubular structure, became suddenly free, clear, and peculiarly sonorous, indicating both a dense conducting medium and a total absence of constriction. After this was noticed in a multitude of cases (and the examinations were made daily for a period of several months), it was also observed that many who were wheezy and evidently asthmatic, and in whom the examination prior to inhalation revealed the orchestral admixture of sounds common to such condition, were immediately relieved, the breathing became free and clear, and often, for an hour after recovering consciousness, the bronchial tubes and air-cells seemed to be undergoing a process of rejuvenation.

As suggested in the essay referred to, this fact appeared the nidus of a discovery which might prove of great benefit, and has been, and it is hoped will yet be, to many sufferers. As already observed, the great difficulty in the way of its applicability as a curative agent, appears to lie in the transitory character of the anæsthesia produced; indeed, in some cases, one exhibition would often fail to produce any of the relief anticipated. In these, however, persistence and repetition were successful, and that a complete control of the nervous erethism could be obtained became evident upon the observance of another and singular fact, viz.:—

Many medicinal substances, often without regard to density, seemed to impart their virtues to the gas and exhibit their effects upon the recipients; this being not only true of substances readily volatilized, but of mineral substances simply dissolved in the last of the series of wash bottles used to purify the gas.

Rochelle salt would not infrequently affect the bowels within two hours, and cannabis indica, conium, hyoscyamus, and belladonna were quite readily made to impregnate the oxide with their medicinal principles.

It is to be observed, that in all these experiments, and in numberless others repeated since, only the purest substances were employed. The nitrous oxide was generated from absolutely pure nitrate of ammonia, washed through a series of large jars, six in number, and contained in zinc gasometers, over water, and made fresh every day; and these points, particularly as to the purity of the ammonia and the kind of receptacle, are *essentials* in its successful application. How or why one ethereal substance like this should take up or hold properties foreign to itself, and yet retain its own anæsthetic power, it is not necessary to argue; *that it* does, is certainly sufficient to our purpose.

After the two facts thus enumerated, the question may be pertinent, why does the close, foul air of London prove so frequently a source of relief to the asthmatic, and why does the burning of paper saturated with nitrate of potassa also relieve? To say that in both cases the excess of nitrogen is the cause may be a sanguine deduction, it is at least not an improbable one. With reference to the latter, it is remarkable that the origin of a so popular and widely used remedy should be wrapped in obscurity, and that we are unable to award to its originator the meed of praise to which he is justly entitled. Its use, however, so general, as what is commonly called touch-paper, in connection with fireworks, may explain the discovery of its properties with relation to asthma.

How it relieves, is a more interesting question, and, if we analyze the process of combustion, the answer may appear. As is well known, nitre readily parts with its oxygen: heated to redness oxygen is expelled and a deliquescent hyponitrite of potash remains; by a still stronger heat both nitrogen and oxygen are given off, and potash and peroxide of potassium remain deflagrated, in connection with a nitrogenous substance, the nitrogen and oxygen eliminated are in a condition to form nitrous oxide, although contaminated with carbon and the acid products of combustion.

To nitrogen or its compounds may be attributed the singular effect upon some sufferers, produced by breathing the vapours arising from the slow decomposition of animal substances, the odours from stagnant cess-pools, and effluvia that would theoretically seem to be the very worst sources of danger. To this agency also may be due the influence of light from burning lamps, an interesting case of which is recorded by Trousseau (*Clin. Med.*, vol. i. p. 539.) In this case the patient was invariably relieved by lighting five or six large lamps in his room, and thus rapidly exhausting the oxygen of the apartment.

Not to dwell longer upon theories, the following may be briefly said of the method adopted with the protoxide, after many experiments.

The gas, fresh and pure, is passed through a jar containing a fluid extract of conium, Calabar bean, or belladonna, according to the necessities of the case, and from this jar is inhaled by the patient, once daily, before retiring, and for four or five consecutive days, the quantity varying according to the condition of the patient, but not exceeding five to eight gallons, never to anæsthesia, the sitting occupying at least ten minutes. Relief almost always follows the first inhalation, and, with one or two exceptions, thus far the first inhalation has produced an uninterrupted night's rest. Upon the disappearance of the nightly paroxysm and the subsidence of all oppression in breathing, the remedy may be discontinued; but must be instantly resorted to upon the first evidence of return.

Of course it is not necessary to define what we mean by asthma, or to revert to the possible complication of some organic disease, of cardiac disease, of extensive bronchitis, of severe and unusual emphysema, of hæmic poisoning, connected with Bright's disease of the kidneys, or of that condition of dyspnœa often met with upon ascending high mountains and to which there are reported to be whole tribes subject in the high regions of Bolivia (the soroche); it is *asthma*, whatever be its subdivisions or complications, *true asthma*, to which we have referred.

The following are taken from recorded cases as matters of interest, and not as simply supporting a theory, for the remedy advocated is a simple one, harmless, except in pulmonary affections attended by hemorrhagic tendencies, and now becoming readily available. These are copied *seriatim et verbatim* from notes made at the time of treatment, and are thus taken without selection, in order to show the actual results. Although roseate enough perhaps without embellishment, they have at least the merit of not being made to appear so, and are given without comment.

1. C. M., æt. 14, male. Has dilatation of right ventricle and hypertrophy (a considerable general enlargement), subject to diurnal attacks. Has been more or less so since five years of age. Six, eight, or more periods of suffering of several weeks duration every year.

Relieved on second inhalation, and after five seemed to have recovered. No return of paroxysm for five months. Usual hour of attack 4 A. M.; premonition day before. No particular rules observed as to diet, except the avoidance of potted and spiced meats, which seemed to predispose to attacks. (This patient has since been subject to recurrence of trouble, but finds relief when the protoxide is resorted to.)

2. Mrs. G. M., æt. 35. Autumnal asthma, with coryza, bronchitis, etc. After five inhalations asthma relieved. Bronchitis removed in two weeks. Usual length of period of suffering three months. (No return the following year.)

3. Miss M., æt. 18. Diurnal attacks. Subject to same two years,

and for three months paroxysm very severe, occurring at 2 o'clock A. M. Bronchitis considerable; some emphysema; very severe case; relieved at once, cured in eight days. (One relapse after 13 months; relieved in two days; inhalations continued four nights thereafter.)

4. Mrs. C., æt. 40. Very similar to No. 2. Autumnal, no cardiac complications; recovery; no return the following year.

5. W. P. (brewer), æt. 32. Attacks diurnal, occurring 4 A. M. Complicating bronchitis considerable; part plethoric, no cardiac disease; relieved immediately and recovered in four days. (No relapse for past seven months.)

*Note.*—It should be stated that, in this and in all cases accompanied by bronchial inflammation, appropriate treatment is resorted to in addition; the medicated inhalations being relied upon simply to reduce the hyperæsthesia.

6. Mrs. C., æt. 45. Bronchial complication considerable. Asthmatic feature relieved; relapse in ten days, relieved in forty-eight hours. (In this case the asthma was evidently not a predisposing or exciting cause of the bronchial trouble, but a result of it, and a second relapse has been successfully treated without resort to the protoxide.)

7. Mr. H., æt. 16. Patient has had hemiplegic paresis for several years. Attacks of asthma diurnal and autumnal. Heart somewhat hypertrophied (eccentric).

Usual period of suffering four months. Relieved at first exhibition of remedy; cure apparently complete after fourth (no relapse).

Any prolonged detail of cases would probably be superfluous. The brevity of the record in those given is to be regretted, but the concomitant symptoms, the exciting and predisposing causes, common to asthmatics, are so familiar, that the fear of needless prolixity will be perhaps a sufficient apology.

---

## ART. IV.—*Aneurisms of the Arteries at the Base of the Brain: their Symptomatology, Diagnosis, and Treatment.* By ROBERTS BARTHOLOW, M.D., Prof. of Materia Medica and Therapeutics in the Medical College of Ohio. Lecturer on Clinical Medicine and Physician to the Good Samaritan Hospital, Cincinnati, Ohio.

IT may be proper to state at the outset, that it is not intended in this article to embrace an account of *miliary* aneurisms, first described by Charcot and Bouchard, which play so important a *role* in the causation of certain morbid states of the brain. It is my purpose to discuss the symptomatology and diagnosis of aneurisms of the larger arterial trunks which give rise to symptoms common to new formations in general, by interference with the functions of neighbouring parts. It is very desirable, if the facts and observations in our possession will warrant it, to separate the symptomatology of aneurismal growths from those of other neoplasia. It is certain that there are no distinctive differences in the symptoms, but by attention to certain signs, to be hereafter detailed, a fortunate guess may at least be made.

This paper is based on the study of (1) a case of aneurism of the basilar artery occurring in the practice of Dr. Isham, of Cincinnati, which I saw at various times during life and examined after death; (2) The letters of Lebert,[1] containing 86 cases of intracranial aneurism collected from various sources; (3) The monograph of Durand,[2] embracing the statistics of Griesinger (*Archiv der Heilkunde*, 1862), of Lebert, and of Gouguenheim (*Des Tumeurs aneurysmales du Cerveau*, Paris, 1866); and (4) a number of cases which have been published in various Journals and Society Transactions, since the appearance of the exhaustive essays mentioned above. Many of these are mere transcripts of *post-mortem* observations. In some the *ante-mortem* observations were not made with accuracy and minuteness, and hence are not suited for an analysis of the symptoms. An entire failure to recognize cerebral symptoms due to hasty and imperfect observations, renders some other reported cases of little value. As an example how attention to some prominent symptom may lead the physician away from the true lesion, I may mention the case reported by Dr. Semple (*Trans. of the Pathological Society*, vol. xx. p. 112), in which an aneurism of the basilar artery caused no symptoms, the patient being treated for bronchitis!

It is to be understood that the cases which I have collected as the basis of my observations were omitted from or have been reported since 1868, the date of Durand's monograph. In Griesinger's, Gouguenheim's, Lebert's, and Durand's essays are contained nearly all the published cases of note reported up to the date at which they were respectively issued. This is the fact indeed with regard to the numerous English contributions of Brinton, Gull, Ogle, and others, to the subject of intracranial aneurisms.

Case 1. *Singularities of conduct; numbness of left arm; vertigo; orbital neuralgia; convergent strabismus; death; autopsy; aneurism of the basilar artery.*—I am indebted to Dr. Isham, the attending physician, for the following history of this case: "On the 12th of March I was summoned to attend Mr. C——, aged 37, a very active man of nervo-sanguine temperament. He was the subject of severe paroxysmal pain over the right orbit. He also complained of an uneasiness at the back of the neck. His tongue was slightly coated. The pulse and temperature were normal. The case was regarded as a supra-orbital neuralgia, and was relieved by the hypodermic injection of morphia. Quinia pills were also prescribed. He engaged in the business of his calling the next day (13th), and I saw him in the evening. The pain had returned, though much modified in severity; chloral was given with good effect, and the quinia continued.

"I lost sight of him until the 17th, when he presented himself at my office with a closure of the right eye. He complained of slight pain in the ball and numbness of right side of nose and upper lip. In his efforts to elevate the eyelid he would exercise all the muscles of the face. When the lids were separated by traction, the axis of vision was found parallel with that of the right eye. The closure of the lids was attributed to spasm of the orbicularis, and, together with the other symptoms, to be due to disturbance of function in the orbital division of the fifth nerve. A liniment was prescribed to be applied about the eye, to the side of the nose and cheek, and liq. potass. arsenitis ordered. On the 18th he was again at my office in the same condition, except some congestion of the conjunctiva, with pain. He was given a collyrium of morph. sulph., and Fowler's solution was continued. At one of these visits he was examined by Dr. A. T. Keyt, who was present, and who coincided in my view of the case.

---

[1] Berliner klinische Wochenschrift, Nos. 20 to 42, 1866. A full abstract may be found in Schmidt's Jahrbücher der gesammten Medicin, vol. cxxxiii. p. 281.

[2] Des Aneurysmes du Cerveau consideres principalement dans leurs rapports avec l'Hemorrhage cérébrale. Paris: Adrien Delahaye, 1868.

"On the 19th, when I was again called to see him, I found him able slightly to raise the lid by voluntary effort; he had also convergent strabismus of right eye, numbness of left hand, conjunctiva injected and pain in eye and head. I then feared lesion of brain involving third and sixth nerves, and warned him to remain quietly at home. The collyrium was continued, and pills of quinia and morphia given. Notwithstanding he was informed of the gravity of the symptoms, he continued in the active duties of his business this day, and almost every day until April 25th. I saw him on the evening of the 19th, when he was suffering agonizing pain, which was controlled either by hypodermic injection or chloral. The next day (20th) he was better, and I changed the treatment to strychnia sulph. gr. $\frac{1}{40}$, quinia gr. ij, *ter die.* I saw him each day one or more times up to April 6th. The symptoms remained much the same; the worst features lighting up sometimes and again receding. Chloral and morphia were exhibited as required. On the 6th of April he seemed much improved, and had almost perfect control of the *levator palpebræ*, but kept the eye closed from photophobia. The appearance of the eye was normal, except very slight convergent strabismus. Pain in the head and eye was still experienced, but in moderate degree. About this time he consulted Dr. Bartholow, at his office, who confirmed fears as to brain lesion. I saw him no more until the 9th, when he was about the same as on the 6th. Was called in to relieve the pain in his head, which I did, and saw him no more until the 12th, when the same office was again performed.

"On the morning of the 14th was again sent for. Found him with intense pain over forehead. Quieted him with chloral during the day, and in the evening applied five leeches to the temples.

"I was called in the 16th, 19th, and 22d to relieve the pain in his head. From the 22d to the 25th he was free from pain in his head, complaining only of fulness.

"On the 25th, which was a remarkably warm day for a spring month, he fainted in the street. Said he felt a tearing and a snap at the back of his neck, and was then rendered unconscious. He rallied sufficiently to reach Dr. Bartholow's office, where the galvanic current was applied with great relief to the pain in his head, which he described as excruciating. Had to give him a hypnotic at night.

"On the 26th he had a spasmodic seizure lasting but a minute or two, from which he awoke as from a dream. Said he experienced a sensation as of a snap at the back of his neck, and recollected nothing more about it. His wife, who alone was present, described his breathing as stertorous. Thought it might be due to the strychnia, and suspended it.

"On the 30th he had been sitting in his easy chair, and a few moments before death he remarked he felt tired, and lay down on the bed. While smelling some flowers and caressing his little boy, his wife heard him exclaim, 'Oh my head,' and he immediately became unconscious and passed into stertor. Within five minutes I reached him. His heart continued pulsating feebly and at intervals for about three minutes, respiration apparently having ceased.

"During the last year of his life Mr. C. was remarkable for his eccentricities and fickleness, and for a childish lack of judgment at times. In conversation he was unable to confine his mind to one subject for any length of time. Often, when engaged in the serious consideration of business affairs with any one, he would suddenly break off to bring in the most trivial matters, very likely having no relation to the business on hand, or which could not have been suggested by it, and in which his auditor could not have the least interest.

"His conduct at times excited suspicions that he indulged in alcoholic liquors, yet he was strictly temperate. His actions were a constant source of mortification and annoyance to his friends. He would interfere with a conversation between parties, in which he had no interest, in the most abrupt and excited manner. On occasions of friends visiting him he would take no notice of them, or hide himself; meeting them at another time, he would be most affable and cordial. He would seek advice of his most intimate and cherished friends, only to go entirely contrary to their judgment and the plainest dictates of common sense.

"His heart could never resist an appeal directed to his pockets. He would rob himself to lend to any body, no matter what security they afforded. When his wife would expostulate with him, he would say: 'It's my head; I know I don't do right, but I can't help it; I do the best I can; I do things which I know at the time I ought not to do, and yet I cannot stop myself.'

"His medical advisers assured him time and again of the great danger of his condition. He would inquire, 'Do you think it is so bad?' and laugh.

"I have recently learned that for more than two years he had complained at intervals of numbness in his left hand and arm. About twelve years ago, while in Illinois acting as a commercial traveller, he was sunstruck, and since that time the peculiarities in his character above described have been observed."

*My own observations of the case.*—Having had an acquaintance of some years with Mr. C——, and having been consulted several times by him, I am able to add some particulars to the very full and excellent history given by Dr. Isham.

On the occasion alluded to by Dr. Isham, after having experienced the attack of vertigo in the street, Mr. C—— presented himself at my office in the hurried manner which had become habitual. He did not walk—he ran. He talked with extreme rapidity and confusedly, several ideas seeking utterance at the same time. He explained that in stepping from the street to the curbstone, he experienced a terrible sensation in his head, and lost consciousness for a moment. His right eye was closed. The eyelids and soft parts about the orbit were swollen. He had convergent strabismus and diplopia. He could open the eye, but he had great photophobia. In consequence of the pain caused by the light and to correct the disorder of vision, he kept the eye closed. The conjunctiva was injected, the pupil fixed, but not much dilated. An ophthalmoscopic examination, very imperfectly made owing to his restlessness and the convergence of the eye, disclosed a markedly swollen state of the papilla. He complained of great pain in the eye and in the supra-orbital branches of the fifth. There was great tenderness to pressure along the paths of distribution of the supra-orbital nerve. He had twitching of the muscles of the face. Decided numbness existed in the left hand, his appreciation of pain, of heat and cold, and of touch was lowered, and loss of muscular power was ascertained by the dynamometer.

A descending stabile current of six elements passed through the right side of the head gave immediate relief to the pain, and also diminished the vertigo.

*Autopsy.*—The autopsy was made by the writer in the presence of Dr. Keyt, Dr. Isham, and Mr. Lowry, a medical student. I omit all details not necessary to the elucidation of the symptoms observed during life.

A large amount of blood was found effused in the inferior sub-arachnoid space, extending especially up along the Sylvian fissures, covering the pons and medulla, and filling in the fourth ventricle. A careful examination was made of all the arteries at the base. An aneurismal pouch, one-half inch in its longest diameter, was found on the right side of the basilar artery, in which there was a rent of considerable size. The sixth nerv was here directly impinged upon, and the fifth exhibited changes consequent on irritation from intermittent pressure. The coats of the vessel at this point had undergone the calcareous degeneration and a calcareous plate of considerable thickness formed one side of the aneurism. The vertebral artery on the right side was very small, about one-third the size of the artery on the left. In consequence of this arrangement the blood current from the left vertebral impinged with greatest force against that part of the basilar artery which had undergone the calcareous degeneration. The white substance of the brain was pale. The right lateral ventricle contained considerably more fluid than the left. The accumulation of fluid had taken place, chiefly in the anterior cornu, which was distinctly enlarged by the pressure.

Case 2.—Girl, æt. 12. Epileptic. Paralysis of right side of face and left limbs. Aneurismal dilatation of right middle cerebral near anterior branch. Aneurism due to embolism from cardiac disease. Sclerosis of pons Varolii. Suspicion of syphilis. (*Echeverria.*[1])

Case 3.—Man, æt. 67. Epileptic. Dysphagia and paralysis of tongue. Confusion of mind. Aneurism of both vertebrals near junction to form basilar. (*Ibid.*)

Case 4.—Girl, æt. 26. Epileptic aura proceeding from fingers of the left hand. Ptosis of right eye and paralysis of left limbs. Aneurism of right middle cerebral. Syphilitic. (*Ibid.*)

Case 5.—Man, æt. 29. Numbness of left side of face and deafness of left ear. Paresis of muscles on left side of face, and loss of taste on left side of tongue. Vomiting. Impaired locomotion, and finally inability to walk. Loss of speech. Aneurism the size of a pigeon's egg on the left side of the basilar artery. (*Loomis.*[2])

Case 6.—Man, æt. 45. Had an attack of violent convulsions, in which pupils were contracted, recovered, and had four months afterward another seizure.

---

[1] On Epilepsy. New York: Wm. Wood & Co. 1870.

[2] Medical Record, January 2, 1872.

In right anterior lobe there was an old clot; also a recent extravasation. Aneurism the size of a pigeon's egg of right anterior cerebral. (*Lorbee.*[1])

CASE 7.—Man, æt. —. Ptosis, œdema, insensibility, and ulceration of cornea and eyelids. No movement of ocular globes. Giddiness and headache. Anæsthesia of right supra-orbital region; right side of nose and partial of right superior maxillary region. Parylysis of 3d, 4th, 5th, and 6th nerves. Aneurism of internal carotid in the carotid canal. (*Adams.*[2])

CASE 8.—Man, æt. —. Had three attacks of paralysis; left hemiplegia, right hemiplegia; paraplegia; headache; hyperæsthesia; double vision. Softening of pons. Large fusiform aneurism of basilar artery 1½ inch by 1 inch. Small sessile aneurism of middle cerebral. (*Russell.*[3])

CASE 9.—Woman, æt. 61. Difficulty of speech; paresis of extremities. Aneurism of left vertebral. (*Sydow.*[4])

CASE 10.—Man, æt. 37. Epilepsy. Aneurism of basilar artery size of a pea. Death by rupture of aneurism. (*Fuller.*[5])

CASE 11.—Woman, æt. 59. Small aneurism of right middle cerebral artery, half inch from carotid. (*Broadbent.*[6])

CASE 12.—Woman, æt. 29. Three years before death had pain in the temple and left side of the head. Afterward had attacks of unconsciousness and temporary difficulty in articulation. Left pupil dilated and sluggish. Paralysis of right side. Head drawn in epileptiform attacks to right shoulder. Aneurism of left middle cerebral, size of a hen's egg. (*Wood.*[7])

CASE 13.—Female, æt. 27. Had a fit followed by paralysis of right side; deafness and inability to speak, followed by insensibility. Aneurism of left internal carotid at point of division into anterior and middle cerebrals. Impinged on left olfactory and optic nerves. (*Bristowe.*[8])

CASE 14.—Woman, æt. 50. Impairment and then loss of motor power in left hand and arm, but not much impairment of sensibility. No paralysis of left leg. Confusion of mind; loss of memory, and difficult articulation. Aneurism of the size of a pea on both middle cerebrals. (*Bastian.*[9])

CASE 15.—Boy, æt. 13. Fell in the street; left arm and leg paralyzed. Aneurism of the size of a walnut of right middle cerebral. (*Church.*[10])

CASE 16.—Man, æt. 40. Aneurism of left middle cerebral. Death by rupture. (*Church.*[11])

CASE 17.—A boy, æt. 14. Convulsions and pains in lower extremities. Headache. Retraction of the head. Pupils of equal size, but not sensitive to light. Epistaxis. Aneurism of the posterior cerebral. (*Hutchinson.*[12])

We do not possess very exact data as to the relative frequency of aneurism of the intracranial vessels and of the other arteries of the body. According to Crisp,[13] of 551 aneurisms of various parts of the body, 7 were intracranial. Durand thinks it premature to make a comparison of this kind. So far as we are concerned in our present inquiry, exact determination of this question is not material. It is more important *for us* to know the relative frequency with which the intracranial vessels are involved. We may, following Lebert, group for this purpose the arteries of the base into three systems: 1, *internal carotid and its branches ;* 2, *the vertebro-basilar arteries ;* 3, *the middle meningeal artery.*

---

[1] Archives Générales de Médecine, vol. i. 1868, p. 229.

[2] Surgeon to London Hospital.

[3] British Medical Journal, July 30, 1870.

[4] Schmidt's Jahrbücher der Gesammten Medicin, vol. 130, p. clxi.

[5] Pathological Society's Transactions, 1865, vol. xvi.

[6] Ibid., vol. xvii.

[7] Ibid., vol. xix.

[8] Ibid.

[9] Ibid.

[10] Ibid.

[11] Ibid.

[12] Penn. Hospital Reports, 1869.

[13] Transactions of the Pathological Society, vol. vii.

The statistics are as follows :—

| | | | |
|---|---|---|---|
| Lebert, | Internal carotid | 76 | cases. |
| Durand, | “ “ | 29 | “ |
| The writer, | “ “ | 11 | “ |
| Lebert, | Vertebro-basilar | 35 | cases. |
| Durand, | “ “ | 11 | “ |
| The writer, | “ “ | 7 | “ |
| Durand, | Middle meningeal | 3 | “ |

The internal carotid and its branches thus appear to be the most frequently involved. The individual arteries are affected in the following order, according to Lebert and Durand :—

| | | |
|---|---|---|
| Basilar | 36 | times. |
| Middle cerebral | 34 | “ |
| Internal carotid | 21 | “ |
| Anterior cerebral | 13 | “ |
| Posterior communicating | 8 | “ |
| Vertebral | 5 | “ |
| Posterior cerebral | 3 | “ |
| Inferior cerebellar | 3 | “ |
| Anterior communicating | 2 | “ |

The 17 cases collected by myself make the following exhibit as regards individual arteries :—

| | | |
|---|---|---|
| Middle cerebral | 7 | times. |
| Basilar | 4 | “ |
| Internal carotid | 2 | “ |
| Vertebral | 2 | “ |
| Anterior cerebral | 1 | “ |
| Posterior cerebral | 1 | “ |

With regard to the side of the brain on which aneurisms more frequently occur, the statistics of Lebert and Durand, and those collected by myself, do not agree. According to these authorities the difference in the two sides is as follows :—

| | | |
|---|---|---|
| Right side of the brain | 25 | cases. |
| Left “ “ “ “ | 35 | “ |
| Occurring on both sides | 5 | “ |

My own figures are as follows :—

| | | |
|---|---|---|
| Right side only | 6 | times. |
| Left “ “ | 5 | “ |
| On both sides | 3 | “ |

As regards sex, the proportion between male and female is nearly the same in my collection of cases as in the collections of Lebert and Durand. Of 114 cases given by these authorities, 61 were males and 42 females. The sexes in my cases were distributed thus: 10 males and 7 females.

Exact data on this subject do not exist, but there is much reason for believing that syphilis is the chief cause of intracranial aneurism. In about one-half of my collection of cases there were indications of syphilitic infection. Embolism from cardiac disease probably ranks next in frequency as a cause of arterial dilatation and aneurism.

The size of intracranial aneurisms varies greatly. Those of the anterior and middle cerebral usually attain greater magnitude than aneurisms of other vessels. In this situation they may enlarge considerably without much interference with important neighbouring parts. The size of a pea or of a pigeon's egg is most usual, but sometimes they reach the magnitude of a pullet's egg. Death takes place usually by rupture, and this event occurs irrespective of the size of the aneurism, being determined by its character. These aneurisms are more frequently fusiform than sacculated. Rupture occurs earlier in the latter, especially, if an atheromatous condition of the vessels exists.

*General Symptoms of Intracranial Aneurism.*—Very attentive consideration should be given to the signs by which we recognize an intracranial neoplasm, in order to separate, if possible, those belonging to aneurism from those caused by other adventitious products. A tumour of any sort, slowly growing in the cranial cavity, will alter or abolish functions in adjacent parts by direct pressure, by setting up an irritative action and consequent alterations of structure, and will affect the functions of the brain in general, by pressure on the whole contents of the cavity. The symptoms caused by the conditions first named in the foregoing sentence generally indicate the position of the neoplasm. It will be most convenient to consider these after having examined the general disorders of the functions of the cerebral mass.

Clouston[1] has recently reported some very curious observations, showing the influence of continuous pressure on the contents of the cranial cavity. In two cases of brain tumour, he found after death, "that a portion of the gray and white substance of the convolutions had passed through a small lobe in the dura mater, expanded on the outside of it in a secondary cranial cavity it had made for itself by absorption of the skullcap." These unique observations throw a flood of light on the much disputed cause of *hernia cerebri*. The experimental studies of Pagenstecher[2] also furnish us much valuable information in regard to the influence of pressure on the functions of the brain, but the effects of pressure, suddenly and artificially produced, cannot fully illustrate the phenomena which follow the slowly-developing pressure of an aneurism or brain-tumour. It is certainly the case, however, that a new formation developing in any part of the cranial cavity must interfere, by pressure, with every other part, and symptoms will usually be present, although they may not be so pronounced as to attract attention.

---

[1] Journal of Mental Science, July, 1872.

[2] Experimente und Studien über Gehirndruck. Heidelberg, 1871.

*Vertigo.*—One of the earliest symptoms experienced is dizziness. This appears to me to possess no little value as a diagnostic mark, for in other tumours of the brain, vertigo is a symptom coming on at a much more advanced period in the history of the case. In the beginning slight, and but momentary in duration, it increases in severity, and becomes at last nearly constant. The severity of the vertigo varies with different causes. Exercise and emotional disturbance, as well as all medicinal agents exciting the intracranial circulation, increase its violence. Quiet in the recumbent posture diminishes it. Sometimes it is so severe as to render any effort of the mind distressing, and it may even proceed as far as loss of consciousness.

In the case which I have reported, as well as in many others, strange sensations were experienced in the head. This may be a localized throbbing—"snapping," as my patient expressed it. These sensations are usually referred to the neighbourhood of the position of the aneurism, as the occiput in the case of basilar aneurism, the middle ear in aneurism of the internal carotid, and the temple when the anterior cerebral is involved.

*Headache* is a constant symptom in intracranial aneurism. Like the abnormal sensation referred to above, the site of greatest intensity of pain indicates the position of the aneurism. This is especially the case in basilar aneurism, the pain being felt in the nucha, or about the occipital protuberance. The headache is also general, with periods of exacerbation, in addition to the strictly local pain. A distinction is to be drawn between the headache properly so-called, and the neuralgic pain in the distribution of the fifth, due to pressure on the trunk of the nerve. It is true the general headache in these cases is caused, most probably, by stretching of the fibres of the fifth distributed to the dura mater, but this pain is different in character from an orbital neuralgia, for example, due to pressure on the ophthalmic division of the fifth.

*Epileptiform convulsions* occur in about one-half of the cases. The attacks, as regards severity, vary from simple and momentary loss of consciousness, to the most violent clonic convulsions. Besides general convulsions there occur local spasms, as twitching of the facial muscles, of the muscles of the neck, of the trapezius, etc. The occurrence of epilepsy appears to be influenced by the vicinity of the aneurism to the "*spasm-centre*" of Nothnagel; hence, this symptom is to be expected in aneurism of the vertebro-basilar system, and to be considered exceptional in cases of aneurism involving the anterior and middle cerebrals. Convulsions occur, it is true, when aneurisms of these last-named vessels give way, but such spasms are clearly different from those caused by irritation of the medulla oblongata. This statement is opposed to the views enunciated by Niemeyer,[1] who holds that tumours involving the cortical periphery are more frequently accompanied by epileptiform convulsions. His words are as follows:—

"It is very remarkable and inexplicable that they occur almost solely when the tumours are in the cerebrum, and when they are near the cortical substance."

Russell Reynolds[2] gives an opinion, "as the result of an examination of a large number of cases, that convulsions are most common when the disease is situated in the posterior lobes of the brain, or in the cerebellum, and least frequent when the anterior lobes are affected."

Jaccoud[3] says that epileptiform convulsions result from excitation of the medulla oblongata, by direct irritation, or, through reflex influence, by a distant irritation.

Every body is now familiar with the remarkable experiments by which Nothnagel[4] established the existence of a "spasm centre," and of Setschenow, who demonstrated an inhibiting centre for reflex movements. These facts, determined experimentally, agree with the statistics which I have collected, showing the more intimate dependence of epileptiform convulsions on tumours at the base of the brain. I should not fail to note, however, that Ladame, who has written an elaborate work on brain tumours, (*Symptomatologie und Diagnostik des Hirngeschwülste*) in a paper on tumours of the pons in the *Archives Générales*, thus formulates his opinions on this question:—

> "If a tumour has attained sufficient size to allow of its presence being diagnosticated, and if convulsions be present, the probability is the seat of the tumour is not in the pons Varolii."

The case of aneurism of the basilar (case 1st) was characterized by two kinds of epileptiform attacks: loss of consciousness without, and loss of consciousness with, convulsions. The rule of Ladame is, therefore, much too absolute. Epilepsy seems to be a constant symptom in aneurism of the vertebral arteries.

Jaccoud, in making a differential diagnosis between aneurisms and other tumours occurring within the cranium, asserts that the *psychical functions* are little or not at all affected. This is not in accordance with my own conclusions after the examination of many reported cases, and is certainly negatived by the facts of case 1st.

Lebert enumerates under the head of disorders of intelligence, feebleness of mind, impaired memory, stupidity, delirium, and transitory paroxysms of mania. Dr. Clouston, in the paper from which I have already quoted,[1] gives, amongst others, the following deductions in regard to the mental symptoms of brain tumours based on an analysis of six cases:—

---

[1] Niemeyer, Text-Book of Practical Medicine, Am. ed., vol. ii. p. 242.

[2] System of Medicine, vol. ii. p. 480.

[3] Traité de Pathologie Interne, tome premier, Paris, 1870, p. 260.

[4] Archiv für Patholog. Anat. Band xliv., Hft. 1.

> "That irritability and loss of self-control are the first mental symptoms of those tumours of the brain which directly produce morbid psychosis.
>
> "That a blunting of the whole of the mental faculties soon comes on, and gradually passes into coma."

It is no doubt true of intracranial aneurisms, as of other adventitious products in the brain, that they sometimes occur without any disturbance of the psychical functions. That no symptoms of mental disorder were observed in many cases, is not conclusive that none existed. Many of the reported cases came under observation when such accident as rupture required admission to the hospital or medical attendance, and then an imperfect history only could be obtained.

*Special Symptoms.*—Aneurismal tumours of the arteries entering into and forming the circle of Wills, may interfere with and prevent or interrupt the function of all of the cranial nerves from the first to the twelfth. They may cause softening by pressure of the anterior and middle lobes of the cerebrum, and part of the cerebellum. They may impinge upon and disorder the function of the crura cerebri, the pons Varolii, and the medulla oblongata. They may compress the superior and inferior petrous sinus, the cavernous sinus, the transverse sinus, and the coronary sinus. The special symptoms which they produce will indicate with great certainty their situation. An aneurism of the internal carotid will affect the sense of smell by compression of the olfactory nerve; will also cause ptosis, convergent strabismus, and a dilated pupil by pressure on the motor oculi; will produce amaurosis by direct interference with the optic; will cause congestion of the eye and swelling of the veins of the face by compression of the cavernous sinus, and will be accompanied by intense tic doulourenx, especially in the ophthalmic division due to irritation of the fifth nerve. With the growth of the tumour, especially if that portion of the artery within the carotid canal be involved, there will occur noises, pulsating in character, in the ear, followed by impaired hearing, and finally, by complete deafness. The facial nerve may also become involved, and paralysis of the face on the same side will be observed. Softening of the neighbouring part of the middle lobe will take place, and by reason of this, or by pressure on the crus cerebri, crossed hemiplegia will occur.

As the middle cerebral, except the first part, does not come into relation to the cranial nerves, and lies in the fissure of Sylvius, between the anterior and middle lobes of the cerebrum, an aneurism of this vessel may attain considerable size without producing any other symptoms than those common to adventitious products in the brain—headache, pulsative in character, vertigo, confusion of mind, visual disorders, etc. The headache is usually felt in the temples. In consequence of the pressure of these growths, softening of the neighbouring cerebral tissue takes place, and when extensive may, of course, invade the motor tract, causing hemiplegia. When the aneurism is on the left middle cerebral, aphasia may be present, with or without right hemiplegia.

---

[1] Journal of Mental Science, July, 1872.

Occasionally, the motor oculi may be impinged upon, when there will occur ptosis, divergent strabismus, etc. Convulsions do not often take place. When the artery gives way, convulsive seizures may be observed, similar to those which accompany extensive meningeal hemorrhage. The extravasation may not be sufficient to terminate life, when the case is assimilated to one of ordinary apoplexy, due to a rupture of an atheromatous vessel or a miliary aneurism.

The *posterior communicating artery* is in a situation to come into relation with parts, the disturbance of whose functions causes very characteristic signs. It lies under the optic tract and the crus cerebri, and the third and sixth nerves pass alongside of it. Disturbances of vision due to pressure on the optic and motor oculi would hence be present early. As the tumour enlarges, disorder of locomotion, or hemiplegia, results from pressure on the crus cerebri. Epilepsy has been observed, and Lebert speaks of mental apathy, stupor, delirium, monomania, as symptoms in these cases.

The most important of the intracranial aneurisms are those seated on the *basilar artery*. This vessel is more frequently affected in this way than any single artery of the brain, and it comes into relation with some of the most important parts of the encephalic mass. The crura cerebri, the pons, the medulla oblongata, the cerebellum, and the third, fourth, fifth, sixth, seventh, and eighth nerves may be directly impinged on as an aneurism enlarges. The symptoms will vary with the position of the aneurism, as regards the direction of the vessel, and the size of the tumour. One of the earliest, most distressing and persistent symptoms is headache. This is very commonly, indeed, felt in the occiput, and is sometimes confined to a limited region. Frequently the pain radiates from this point, over the neck and shoulders. Besides headache, tic douloureux is sometimes present. This symptom, as in Case 1, is dependent on irritation of the trunk of the fifth, and the side on which the pain is felt is determined by the position of the aneurism. Convergent strabismus will occur when the sixth nerve is paralyzed by pressure, and ptosis, a dilated pupil and divergent strabismus, when the third nerve is destroyed. When the third, fourth, and sixth nerves are involved, the eye will be without motion, the pupil dilated and fixed. Pressure on the cavernous sinus will cause optic neuritis, "choked disks,"[1] and swelling of the eyelids and face by interference with the return of blood through the ophthalmic and facial veins. Vertigo is also usually present, but, according to Lebert, not so commonly as headache. The vertigo is frequently accompanied by odd sensations felt in the occiput, due in part to the vertigo, and in part to pressure and irritation of the motor tract. More or less disorder of locomotion may occur. Sometimes, but rarely, the irritation extends deeply enough to involve the sensory fibres, when hyperæsthesia, or, if the change has proceeded as far as destruction of tissue, anæsthesia, may be present, and may be more or less symmetrical on the two sides of the body. Bilateral numbness, alternating hemiplegia, auditory paraplegia, or a general paralysis may ensue. Very commonly the nerve is so far damaged as to cause deafness. Dysphagia and aphonia (paralysis of chorda tympani, glosso-pharyngeal, etc.) may be present. The speech is frequently affected, sometimes hesitating, sometimes precipitate, as was well marked in Case 1.

---

[1] Allbut, On the Use of the Ophthalmoscope.

Various mental symptoms are usually observed, as feebleness of memory, mental depression, and various perversions of the moral and intellectual faculties.

In aneurism of the *vertebrals*, we observe dysphagia, aphonia, vomiting, obstinate constipation, disorders of motility and sensibility, epileptiform convulsions, and finally the mental symptoms common to aneurisms of the other arteries of the base.

*Treatment.*—The remedial management of intracranial aneurisms is not an entirely hopeless undertaking. Mr. Coe[1] cured an aneurism of the internal carotid by ligation. At least the symptoms which were considered characteristic of intracranial aneurism, disappeared after tying the vessel externally. This operation offers a reasonable expectation of success in the case of aneurism of that portion of the artery in the carotid canal.

Since the remarkable demonstration by Langenbeck,[2] of the influence of ergotin administered hypodermically, over aneurisms situated externally, we have in this remedy a precious resource against intracranial aneurism. If, as Hildebrandt[3] has recently shown, ergotin may cause absorption of uterine fibroids by its action on the vessels, it requires little exercise of faith to believe that it may accomplish good results in intracranial aneurism. The solution employed by Langenbeck was as follows: ℞.—Ergotini, gr. ij; spts. vini rect., glycerini puri, āā ʒss. Five minims contain $\frac{1}{6}$ of a grain.

Hildebrandt recommends a solution of three parts of the aqueous extract of ergot (Ergotin of Bonjean) in seven parts each of water and glycerine. This occasions less smarting than a solution containing alcohol.

---

[1] Holmes's System of Surgery, vol. iii., 2d ed.

[2] Berliner klinische Wochenscrift, No. 2, 1869.

[3] Ibid., No. 25, 1872; also Quarterly Summary in current No. of this Journal.

At the same time that ergotin is being used hypodermically, we may employ the iodide of potassium internally. Since the publication of the results with this agent, by Roberts, of Manchester, and Balfour, of Edinburgh, it has been used with more or less success in the treatment of internal aneurisms. As syphilis appears to be one of the most important factors in the causation of intracranial aneurisms, the iodide of potassium is especially indicated in those cases originating in this way. In order to be effective, this remedy must be administered in large doses, ℈j to ℈ij or more, three times a day.

Besides these two remedies, we may employ the galvanic current for the relief of the neuralgia of the fifth, which so frequently attends aneurism of the vessels at the base. A downward stabile current, from six elements of Siemens and Halske, gave great relief to Case 1.

The reader may ask what personal experiences I have to offer in favour of this method of treating intracranial aneurism. In one case, in which the character of the symptoms indicated an intracranial neoplasm, most probably aneurismal, I succeeded in procuring marked amelioration, and, it may be cure, by a persevering use of large doses of iodide of potassium, and the galvanic current. I have not reported this with the other cases, because there must ever remain a great degree of uncertainty in regard to the existence of an intracranial aneurism, the actuality of which has not been demonstrated by *post-mortem* examination.

---

## Art. V.—*Hypodermic use of Strychnia.* By Julian J. Chisolm, M.D., Professor of Operative Surgery, University of Maryland; Surgeon in Charge of the Baltimore Eye and Ear Institute, etc. etc.

Twelve months since I published my experiences with the hypodermic use of strychnia in retinal troubles. Since that period I have used it daily in nervous affections of the eye, with very varied results, at times very striking, again quite negative. In no case has the use of the remedy been followed by any injurious effects, although a few cases were quite susceptible to its toxic influences. I have been surprised to find that in increasing daily the quantity injected under the skin, a much larger amount than that mentioned by the books may be safely administered, with good results. In my early experiences I always commenced with the $\frac{1}{60}$ of a grain, and slowly increased until $\frac{1}{30}$ of a grain was used, which latter amount I was afraid to exceed. Now I usually commence with the $\frac{1}{40}$ of a grain.

The strength of the solution which I use is sulph. strychniæ grs. iv., aquæ dest. ℥j, each minim containing the $\frac{1}{120}$ of a grain of the alkaloid. The sulphate of strychnia is quite soluble in pure water, at least to this extent, and in this strength it makes a very convenient form for administration. For the past ten months I have usually commenced the strychnia treatment by injecting 3 minims of the solution, equal to $\frac{1}{40}$ of a grain of the drug. If no marked bracing of the muscles, heaviness of the calves, tightening of the jaws, or stiffening of the joints ensues, the amount of the solution for each day's injection is increased by one minim until a maximum dose is finally reached, which is frequently $\frac{1}{6}$ and often $\frac{1}{5}$ of a grain. In one case $\frac{1}{4}$ of a grain of the sulphate of strychnia was injected at a dose, and continued daily, without causing any special annoyance. When in progressively increasing doses the physiological effects of the remedy, indicated by muscular contractions, are excited, I do not diminish the quantity for the next injection, as experience has taught me, that the same dose, when repeated for two or three days, will cease to annoy, and then an augmentation may be safely indulged in. By this methodical and gradual increase, the maximum dose can be attained in from 15 to 20 days. In some cases I have found that the good results are not secured until large doses are reached; simulating, in this respect, the large doses of iodide of potassium, which excites a rapid subsidence in syphilitic symptoms, when ordinary doses of from 5 to 10 grains, continued for a long time, had produced no decided effects.

When the dose of strychnia has attained its maximum, that is to say, as much as can be comfortably borne, it should be steadily persevered in at this strength as long as any improvement shows itself. I have continued the injection of $\frac{1}{6}$ grain doses for 3 months. Should, from any cause, the daily injection be interrupted, even for a short time, it is not safe to resume the dose left off with, but a smaller quantity should be used, which may be rapidly increased until the full dose is again reached. As with all potent medicines, cases will now and then be met with, in which the commencing dose of $\frac{1}{40}$ of a grain may prove too powerful. In a single case only have I experienced uncomfortable muscular contractions from this small quantity. The effects in this patient were sufficiently annoying to establish a rule for a cautious commencement in every case. I have heard of one case of marked idiosyncrasy in which a single dose of $\frac{1}{50}$ of a grain of strychnia (the first), hypodermically used, caused convulsions and insensibility, which continued for several hours. The injection was made by a country physician, and I cannot vouch for the accuracy of the amount injected. In another case, coming under my immediate observation, that of a young lady of nervous temperament, an attack of convulsions of short duration was brought on by the use of $\frac{1}{20}$ of a grain, which seemed to be the largest dose that she could take with safety. The best results are obtained when two injections are made daily, morning and evening. When it is inconvenient to make more than one injection per day, the effects upon the system may be kept up by the administration of strychnia pills, first in doses of $\frac{1}{40}$, then $\frac{1}{30}$, and finally $\frac{1}{20}$ of a grain each, twice a day.

There is no advantage in injecting the solution under the skin of the temple, or other portion of the head, for the cure of eye or ear diseases, as it causes needless pain to puncture frequently these sensitive surfaces. As the remedy can only act upon the nerves of sight and hearing through the instrumentality of the nerve centres, and by the circulation, I always select the arm as the least sensitive and most convenient seat for the injection. In my experience, the loose skin near the outer surface of the shoulder, or in the upper and outer third of the arm, is the preferable site for the operation. Care must be taken to avoid superficial veins, otherwise bleeding from the puncture annoys, and the arm becomes sore. When the point for throwing in the injection is carefully selected, the puncture should be bloodless.

The canulated trocar of the hypodermic syringe should pass through the skin without resistance. If force be necessary to enable it to reach the subcutaneous cellular tissue, the cause will be found in a blunt heavily shouldered point which needs the cutler's care. As obtained from the instrument maker, the new points are always dull and need sharpening. The necessity for keeping this useful instrument in order is not so seriously felt by those who use it seldom; nor would the pain of application be complained of by persons upon whom it is now and then inserted for the relief of severe neuralgias. When it is systematically used once or twice every day for months upon the same individual, its easy or forced introduction, with the subsequent little or much uneasiness, will be commented upon.

Those not skilled in the use of the hypodermic syringe should, in applying it, first lift a fold of the skin between the thumb and index finger of the left hand, then place the point of the canula at the base of this fold, avoiding visible veins, and thrust it forward until at least one half the thickness of the fold is transfixed. When the canula has perforated the skin and its point lies in the loose cellular tissue in the centre of the fold, all resistance to the onward progress of the point will have ceased. The canula needle will now have gone sufficiently deep under the skin. In the next step of the operation the surgeon lets go the fold and with the same fingers steadies the syringe so that the point may not draw out of the puncture; nor, on the other hand, be thrust too deeply whilst the fluid is being injected. As the injected fluid causes an elevation of the skin, making a little reservoir in the subcutaneous cellular tissues with the puncture as an outlet, it is best by pressure with the finger upon this prominence to disseminate the fluid through the plane of areolar tissue before the canula be withdrawn; otherwise some of the injected fluid will escape, and the full dose not be retained for absorption.

As we are dealing with a very potent remedy, it is the safest course to put in the syringe only the dose to be injected. Some physicians fill the syringe, and throw under the skin from this quantity the number of minims desired, as marked upon the scale attached to the instrument. Or they screw down the gauge upon the handle and then inject from the large quantity. Should the screw gauge be loose, or the piston work hard, a larger quantity than is desirable will escape through the canula, and an innocent dose may be accidentally converted into a poisonous one by this addition of a few minims of the solution. I adopt the following plan in using the syringe. First, take into the syringe more fluid than the dose to be injected. Holding the instrument with canula upwards, expel all air from the cylinder, and continue to push the piston until all excess of fluid, not required for the injection, is driven out. As I leave in the hypodermic syringe only the dose which is intended to be thrown under the skin, no possible accident can occur.

I have had patients brought to me who had received hypodermic injection at the hands of excellent physicians, and had complained much of the severity of the treatment. In these patients could be traced every puncture by its permanent scar, as if from a boil, in proof that a good deal of painful inflammation must have been excited. This condition could only have been induced by dull needles, or by the use of acidulated solutions of strychnia. The sulphate of strychnia, as already stated, is readily soluble in distilled water for the strongest solutions that should be used hypodermically; and, if the canulas be sent to the cutler's for sharpening as often as surgical instruments should be, the entire trouble which tends to make patients timid would be obviated. When used with the necessary precautions, the instrument leaves so slight a trace that in twenty-four hours the location of the puncture can scarcely be made out. As a rule, no inflammatory redness should follow upon the hypodermic use of strychnia. At times when I have accidentally punctured a small vein, a discolored spot, from blood extravasation, will remain for a few days, and its presence creates some soreness. With proper care this accident should not occur.

Cases in which the hypodermic use of large doses of strychnia will prove useful are quite varied, and their number is daily increasing. In ophthalmic surgery the free use of the remedy is in some diseases curative, in others palliative only.

*Hemeralopia*, even of months' standing, will yield so promptly to a few injections of the sulphate of strychnia that the remedy may be considered nearly antidotal in character, and can be relied on with confidence. I have often observed night-blindness, in recent cases, to disappear after two injections.

In cases of *muscular asthenopia*, from overwork, in which reading becomes painful, with letters running into each other, or in which the letters lose their sharp outline when looked at for a few minutes, equally prompt relief will often follow upon the hypodermic use of the remedy.

In *amblyopia* of recent occurrence, where small objects do not suffi·

ciently impress the retina to excite clear vision, much confidence can be placed in strychnia.

In *tobacco amaurosis*, I have met with a decided and prompt response from the use of the syringe.

A case in point just dismissed from treatment was that of Mr. R., whose vision for the last three months has been steadily and perceptibly decreasing—cause, excessive use of tobacco—general vision misty, both for near and distant objects. Has been forced to give up newspaper reading. After the daily use of strychnia for two weeks, he could read "brilliant" type, which is the finest print.

In *progressive nerve atrophy* not dependent upon intracranial trouble, there is no remedy, that I am aware of, which will give such satisfactory results. In white atrophy the effects are varied; at times useful sight is restored; whilst in others, equally promising at the commencement of treatment, the effects are negative even after a careful and continued use of the remedy in full doses.

A gentleman now under treatment, a case of white atrophy with chalky disks and threads of vessels, was treated by me ten years since for the same trouble, and his case was then deemed hopeless. He could distinguish objects when brought very near to the eye, and held towards the temporal side. For the past ten days he has been taking hypodermically large doses of strychnia, and, by the use of test objects, notes a daily improvement, being able now to distinguish a door knob sixteen feet off.

In *amblyopia*, connected with choroidal atrophy, whether there be large crescents or a spotted fundus, I have observed the vision to be permanently sharpened under the hypodermic use of strychnia. In fact whenever the retina or optic nerve needs stimulation to correct defective vision, the subcutaneous injection of a solution of strychnia will be found of benefit.

As strychnia exhibits an indirect influence over the contraction of bloodvessels, its hypodermic administration may be found of great value in cases of intra-ocular congestions, especially glaucomatous conditions, where its action, by relieving the distended bloodvessels—and thereby diminishing tension, may obviate the necessity of an operation upon the eyeball. I have heard of one case of *acute glaucoma*, in which prompt relief is said to have followed upon the hypodermic injection. Sufficient experience has not yet been collated in these congestive cases to induce a reliance upon the remedy. Should a further experience in the use of strychnia in glaucoma sustain the reputation of the drug in the relief of other eye troubles, this new field for its application will be hailed as one of the most valuable contributions to modern ophthalmic surgery.

## Art. VI.—*Ovariotomy by Enucleation, without Clamp, Ligature, or Cautery.* By J. F. Miner, M.D., Professor of Special Surgery in the University of Buffalo, Attending Surgeon to the Buffalo General Hospital, and to the Hospital of the Sisters of Charity.

In proposing a new method of procedure in so important an operation as ovariotomy, it is quite becoming, at least, to state the facts upon which the proposition rests, and leave others to draw their own conclusions.

During an active surgical practice of twenty-five years, I have been in the constant habit of enucleating solid and cystic tumours from all the important surgical regions, following in this the example and teaching of surgeons generally. We have all felt a safety when attempting to remove these morbid growths, if we could find a well-marked boundary where the morbid could be separated from the healthy tissue, by the finger or handle of the scalpel; indeed, but for expectation of finding a well-defined boundary to be thus broken up, the removal of many of these tumours would never be attempted. Surgeons have always, so far as I know, been in the habit of *enucleating* all other tumours, not inextricably joined to the surrounding tissues, so that, upon a little reflection, it will appear strange that it should not earlier have been tried in ovariotomy, rather than that it should now be proposed and urged upon the profession for trial.

No surgeon in the world was ever more surprised at what he had done than myself, when I found that I had removed a large ovarian tumour without ligating a single vessel, and without any hemorrhage worthy of notice.

My first observation and experience in this procedure occurred in April, 1869, and the case was reported in detail in the *Buffalo Medical and Surgical Journal* for June of the same year.

I was invited to remove an immense ovarian tumour of two years' growth, which had been repeatedly tapped, but the contents at length proved too thick to be drawn through the largest sized canula, and, distress becoming too great for endurance, any operation which would end it, whatever might be the result, was gladly accepted. The tumour was multilocular, weighing, as near as could be determined, one hundred pounds. It was attached throughout its entire circumference to the omentum, intestines, walls of the abdomen, and all other parts with which it came in contact. These attachments were not so firm but that they could be broken up, and with great care the tumour was separated from the surrounding parts until the pedicle was reached. The process of enucleation had been carried on so successfully and so extensively, that encouragement was afforded for continued trial. The pedicle was large, and extended over a wide surface, but by careful and patient effort, it was separated from its entire attachment to the tumour, and the immense growth removed without the ligation of a single vessel. The terminal branches of the vessels of the pedicle gave out no more blood than issued from the vessels of the attachments elsewhere, and there appeared no more occasion for ligature here than elsewhere. All hemorrhage soon ceased, and the incision was closed by interrupted suture. The success of this procedure was complete, and the patient continued to improve, declaring herself quite well at the end of about two weeks, without having had an unfavourable symptom. She now commenced to lose her relish for food, grew weak and desponding, and died from exhaustion on the twenty-first day after the operation. The fatal termination detracted nothing from the success of this mode of treating the pedicle; indeed, so remarkable was the size and attachment of the tumour, that any attempt at recovery was surprising, and yet the feeble, emaciated, exhausted patient continued to live long enough to show that this manner of treating the pedicle was, at least in her case, unobjectionable.

The second opportunity I had of testing the feasibility and safety of the plan, was in the case of a German woman, aged 66, in the Buffalo General Hospital, during December of the same year. She was of feeble and delicate appearance, and considerably emaciated. The operation was made in presence of the students of the Buffalo Medical College, and many physicians, and I was assisted by my colleagues, both of the College Faculty and Hospital Staff. This tumour was found also attached to the walls of the abdomen and omentum, but the adhesions were readily broken up. The cysts were emptied to some extent, and the tumour raised from the cavity of the abdomen. On reaching the pedicle it was found large, its principal arteries throbbing distinctly. Commencing at the base of the pedicle, the fingers underneath all, it was gently separated or torn from the cyst, following out the vessels to their final termination, as they extended over the walls of the tumour. Upon removal it was found to weigh seventy-one pounds, and to be composed of numerous cysts. The bands of vessels composing the pedicle, when separated from the tumour, contracted so as to corrugate the vessels, and leave the pedicle appearing almost as if divided by a knife. To the surprise of my associates, little hemorrhage followed the separation, less than attended separation of the bands of attachment elsewhere. She recovered from the anæsthetic, received the congratulations of her friends, and seemed very comfortable. By misunderstanding of attendants she received, after four hours, a second subcutaneous injection of one-half grain of morphia, and soon appeared as if narcotized. From this she could not be aroused, and she died eighteen hours after the operation.

*Post-mortem* examination showed no hemorrhage, and we inferred that death was from either an overdose of morphia, or shock, or both combined.

These and some other similar cases were soon after published in the *Buffalo Medical and Surgical Journal* in connection with remarks as to the safety and general advantages of this method of operation, and since then other surgeons have added their experience to my own, so that I am no longer confined to personal observation alone, repeated trial having made it *certain* that the ovarian tumour can be removed without the ligation of vessels, thus leaving no pedicle to treat.

It is well known that all the difficulties and many of the dangers of this operation have depended upon the pedicle, its length, size of vessels, modes of treatment, etc. etc., so that a proposition to avoid all these, all clamp, cautery, and ligature, and really have no pedicle, may naturally appear startling to surgeons who have tied large vessels in the operation, or have witnessed the fearful hemorrhage which sometimes takes place from slipping of clamp or ligature; a moment's reflection will, however, remove the surprise. The ovarian tumour is composed of a firm, dense, fibrous cyst, containing fluid of varied colour and composition. It may, and it may not, have a solid portion, but usually it does have more or less of the latter, and it is often divided into numerous smaller cysts—cysts within cysts. Externally it has this dense, firm covering, and the vessels which sustain the growth enter it, if at all, only of capillary size. The attachment of the pedicle to the cyst is much more easily broken than any one would suspect who has not attempted its separation in the manner described. The same efforts which are made to separate the adhesions elsewhere, if extended to the pedicle, will be found equally successful. The finger should be introduced under the central portion of the pedicle, fully down upon the cyst, and by a gentle elevation followed out along the fasciculi of vessels as they extend over the walls of the tumour; nothing can be more easy of execution, or more readily accomplished. Other similar cases might be related, but I choose to refer to the experience of others in confirmation of my proposition, rather than multiply cases of my own. Prof. Thomas, in his recent work on Diseases of Women, states:—

> "I have resorted to this method advised by Dr. Miner, of Buffalo, N.Y., three times, with good results, in cases which would have proved unmanageable by other means. . . . It appears to me to be the most valuable of all the contributions to ovariotomy which have emanated from this country."

Richard H. Meade, Esq., Consulting Surgeon to the Bradford Infirmary, England, relates a case in which he performed ovariotomy, and observes:—

> "When I commenced the above operation I had no idea of imitating his [Dr. Miner's] proceeding, but when the tumour (to my horror at the time) enucleated itself, and there appeared to be no bleeding from the pedicle, I determined to follow his example, and leave the torn surface unsecured, thinking that the risk from hemorrhage was less than that from inflammation from the presence of a foreign body in the peritoneal cavity. My case turned out successfully, and I think I should venture to repeat the proceeding in some special cases."—*Brit. Med. Journ.*, November 26, 1870, p. 577.

Thus it will be seen that the experience of other surgeons was early found to agree with my own, and my convictions of its safety and propriety strengthened. More recent observations have confirmed and made it, I think, *certain* that ovarian tumours can be removed as other cystic tumours are removed, by *enucleation*, that is, by separation from the vessels and tissues by which they are surrounded and nourished, that it can be done without hemorrhage, and without ligation of vessels, thus avoiding many of the dangers attending the operation, such as secondary hemorrhage, as where large vessels are ligated or secured by the clamp; the *debris* of burnt tissue, as a source of peritoneal inflammation, where the cautery has been employed; the decomposition of parts strangulated beyond the ligature, when all is returned into the abdominal cavity, or the keeping open of the incision if the pedicle is placed in the lower angle of the wound; in a word, avoiding all the difficulties and dangers attending the treatment of the pedicle.

At the risk of being tiresome to my readers, I will refer to some of the particulars of my last operation, as it illustrates what may be hoped for in this method of removing these growths.

My friend Dr. S. F. Mixer, of Buffalo, who had already become familiar with this plan of operation in ovariotomy, invited me to remove an ovarian tumour in May last, from a young lady 22 years old, of nervous, delicate temperament. The growth had been noticed for only about six months; consequently was rapid in formation, and exactly the kind to test, so far as any one case could test, the safety of enucleation. After the patient was fully under the influence of chloroform, an incision about four inches in length was made, exposing the tumour. The body was found directly under the incision, and was attached to the walls of the abdomen for a diameter of four or five inches. This being separated, a large trocar and canula were introduced, through which the contents of the cyst escaped, and the tumour was drawn through the opening and raised from the cavity of the abdomen. The pedicle was now carefully separated from the cyst, beginning at its central portion and peeling the vessels and tissues by which they were surrounded from the walls of the tumour. This was readily effected, and the tumour, weighing eighteen pounds, removed. Two small vessels bled a little, and torsion was made with artery forceps. No further hemorrhage, indeed no hemorrhage worthy of mention, attended the separation, which would not have ceased spontaneously in a few minutes. The abdomen was sponged of all blood, serum, and such contents of the cyst as had escaped, and the wound closed by interrupted silver suture, supported by adhesive strips passing around the body, and the patient placed in bed. She vomited that night several times, apparently from the effects of the chloroform, which, with the anxieties of the operation, increased the pulse to 120 per minute. After this subsided, or after the first forty-eight hours, the patient had no further symptom of disease, pulse became natural; appetite good, expression cheerful; no pain, tenderness, swelling or suppuration followed. The patient was not made ill by the operation.

Whoever had seen ovariotomy performed by any of the other methods, and had then witnessed the ease, rapidity, absence of hemorrhage, and completeness of this surgical procedure, could not but be impressed with the safety and superiority of this over any other method before proposed.

It will be asked, can all ovarian tumours be removed by this method? Perhaps it is not possible to remove all ovarian tumours by any plan of procedure. Certain it is, that surgeons have been in the habit of making what they term exploratory incisions, and in some cases abandoning the undertaking. These abandoned cases were formerly very numerous, but the discovery that adhesions did not make it impracticable to proceed reduced the number very greatly. Many of the cases formerly abandoned could, beyond doubt, have been removed by enucleation, and similar ones are now removed, not only by this but by all other methods of operation. The "exploratory incision," so called, will remain, as expressive of a condition of things not anticipated by the surgeon, so long as it remains impossible to make in all cases positive and definite diagnosis; but it is believed that all ovarian tumours capable of removal can be removed by the method proposed, with advantages so manifestly superior as to commend it for trial before resorting to any other plan.

It may here be remarked that the enucleation of the cyst does not in the least interfere with the subsequent adoption of any method found necessary for the arrest of hemorrhage; but careful study of the best methods of enucleation will prevent resort to any other expedient. The methods of enucleation are to be studied, but thus far no difficulty has been encountered in separating the pedicle from the cyst; it is astonishing how readily it is accomplished. The finger is easily inserted fully down upon the cyst, at the base of the pedicle, and the strands or bundles traced out by a gentle lifting process to their final termination upon the sides or walls of the tumour. If any vessel, larger or less corrugated than the rest, should afford troublesome hemorrhage after a few minutes' exposure, it should be twisted after the usual method of torsion for arrest of hemorrhage, or subjected to the action of Dr. Speir's artery constrictor should it prove to act more efficiently than torsion, or if, as might possibly occur, from hasty or imperfect manipulation in separating the pedicle, a larger vessel should be ruptured, a small metal ligature may be applied, and, thus supplemented, *all ovarian tumours capable of removal can be,* and I am convinced *should be, removed by enucleation.*

## ART. VII.—*Medical Notes on the Upper Amazon.* By FRANK L. GALT, M.D., of Iquitos, Peru.

THE Amazon River, in its course eastward, reaches *Tabatinga,* the Brazilian frontier post, which is two thousand miles from the Atlantic Ocean. From this frontier westward the Amazon is in Peruvian territory, and is known as the Marañon,[1] by those through whose country it passes, and keeps this name to its headwaters in the Andes. Some five hundred miles west of the above-named frontier, the Marañon receives its largest tributary, whose quantity of water, its navigability, and its running through the same lowlands as the lower Marañon, seem to entitle it to be considered a continuation of the Marañon itself; but which is known locally, and on the maps, as the Ucayali. At some two hundred miles west of this river the Marañon reaches the spurs of the Andes, at or near Borja, through which it rushes with great rapidity, and above which there is no navigation but for canoes. On the Ucayali, however, the steamers have gone as far as the junction of the Tambo and Urabamba rivers, some nine hundred miles from the Marañon. A few miles up either of the streams mentioned the hills again make navigation impossible, and the rivers degenerate into mere mountain torrents. It is of the valleys of these two large water courses, the Marañon and Ucayali, that the following notes are designed to treat.

---

[1] The altitude of the Marañon above the sea level is not accurately given as yet, though about three hundred feet for its lower third, and probably reaching as high as four hundred or more, below Borja. I do not speak with much certainty on the subject as yet.

The basin of the Ucayali extends to the west at varying distances, from fifty to one hundred and thirty miles, up to the foot of the eastern Cordillera of the Andes, and it is known generally as the *Pampa del Sacramento*, the name being given by the old Franciscan friars, in their voyage through this wild region, some two hundred and forty years ago. This pampa is said to be a low, wooded country, extending some one hundred miles from north to south, in a general direction. To the east, the basin of the Ucayali extends for hundreds of miles, forming, with the basins of other lesser tributaries, what is known as the Montaña, or "wooded country," which is but a continuation of the great Amazon valley of Brazil to the east. The basin of the Marañon extends on the north side of the river some one hundred or two hundred miles, variably, into the mountainous region of Ecuador. West, as before said, the mountain passes begin at Borja, and to the south the Marañon basin may also be considered as that of the Ucayali. The Marañon has a general east and west direction, and is included between 3° and 5° south latitude; and the low country of its valley may be included between 70° and 76° west longitude. The Ucayali is included between 4° 30′ and 9° 40′ south latitude, and its lowlands between 74° to 76° west longitude, on the west, and indefinitely to the east where continues the Amazon basin. Over this immense tract of over one hundred thousand square miles nature runs riot in her wanton luxuriance, and where man appears he is an exotic, though he may be "to the manner born." It is one rank waste of woods and water which, located mostly within the "zone of constant precipitation," enjoys all the glorious privileges of growth and deluge.

In this district the year is divided with sufficient distinctness into two parts, as regards seasons. One, the rainy season—"invierno"—extending from November to April; and the dry season—"verano"—reaching from May to October, the two frontier months of either season being one or the other irregularly.

In the rainy season the quantity of rain-fall, though as yet not accurately gauged, amounts to about seventy inches, the greatest fall being about March, probably. During this time of the year, the northeast winds, which are those which blow over all the Amazon valley as far as the Andes, are lighter and more irregular; the atmosphere is heavily charged with constant moisture, giving to one's body a feeling of warm humidity which is sufficiently disagreeable; shoes mould within forty-eight hours; watches and other instruments become seriously corroded; and medicines, particularly powders and salts, are with great difficulty kept fit for use. The temperature is not so oppressive from its elevation as in the dry season, though the bodily discomfort from the feeling of dampness is probably greater, and the tropical languor is more irresistible, from which, however, one is aroused by the disgusting necessity of an almost incessant war against the inevitable mosquito, whose paradise is all over this section of earth.

The rivers, which begin to rise about October, continue to increase their flood—with the exception of a short standstill or slight fall about December—until May, and during the height of the season, from January to March, the country for miles along the lowlands calls to mind the primeval deluge, which was just now being drained off the earth's surface. Decaying vegetation, undermined banks, tumble headlong, and are swept on the flood, and a dirtier mixture of mud, leaves, trees, broken or entire, cannot be found on the planet than the "king of rivers" presents at this time. Still, there are noble uses in the vilest pictures sometimes, and these sweepings of the watery scavenger are one of the modes by which nature makes pure the air, by removing the festering mass of decomposing materials, washing out the stagnant water sinks, and thus adding the strangeness of health to the jungles of the Amazon valley. The Indian who has spent the dry season on the lowlands or "plaias"—sand flats—curing his fish, or catching the turtle, now retires before the coming flood, and perches himself on some red clay bluff here and there on the river margins, the wild animals hasten to the interior high grounds, the woods become silent, except to the lofty-roosting bird, and the traveller who drifts down this yellow road of liquid mud becomes almost oppressed with the calm supremacy of the silent waters. About May the waters subside, the rains diminish, the air becomes drier and warmer, continuing so up to October; the mercury, however, rarely having a daily average of 29°, and still less frequently does it reach 30°.

At this season we now find the southeast winds more frequent, giving always an agreeable depression to the mercury, the atmosphere of the mornings and evenings generally more clear, and the tropics show all their beauty of leaf and starlight. In June, generally about the 25th, there supervenes a "cold spell," comparatively speaking; cold for the natives, when the mercury for three or four days sinks at night as low as from 22°–19°. So great is even this moderate depression that the natives shiver with the change, nor is the stranger beyond the reach of this impression of chilliness. This change is always known here as the "*inviernito de*

*San Juan*"—"the little (or short) winter of San Juan," because that saint's anniversary falls on the 24th of June, the time about which this cold comes on. This cool change is also one of the noted facts of the lower Amazon as well, where the Portuguese know it as the "*tempo da friagera*" —"the time of cold"—and Bates, the English naturalist, who laboured for many years successfully on the lower Amazon, thinks it to be caused by a continuous cold wind blowing from the south over the damp forests that extend from north of the equator to 18° south latitude, when it is winter in the southern hemisphere; and the cool currents of air travelling north to the equator become only moderately heated in their course, owing to the intermediate country being a vast, partially flooded plain, covered with humid forests. The warm winds of this dry season are from the northwest, which make the air very oppressive, though the great heat is only for a short time, passing off in squalls, attended with thunder, lightning, and light rain. In July, August, and September the variations in the thermometer are greatest, and in these months is encountered the extreme range for the year—from 19° to 29°. In these months, too, more especially June and July, will be noticed fogs, which, however, disappear by 8 A.M. always, leaving the sky clear and bright. The average of annual heat for the whole Amazon has been estimated at 26°. On the Marañon, probably it is some one or two degrees lower. This moderate elevation for a tropical region enters into the elements of present healthfulness of this country.

Such is a brief outline of the topography and seasons of the basin of the Marañon, or the Peruvian Amazon. With such uniformity of temperature, and regularity of seasons, if the two changes of the year may be so called, there is in the diseases of this district a certain characteristic of sameness also to be noted, the features of complaints being distinctive, and not often varied. In the order of frequency the diseases may be mentioned as occurring thus: *Skin Affections; Geophagy; Malarial Fevers; Severe Colics; Trismus Nascentium; Abscesses.*

But before sketching these it may be well to give some notes on the different nationalities, or representatives of man, one finds on the Marañon. And first in point of numbers and possession is the Indian, who lives scattered very much about the river margins, the interior of the Montaña itself being entirely too dense a vegetation to permit man to move about even a foot—the water-courses being the only highways of that region. The South American Indian, particularly the one living under the tropical skies, is a different character from the obstinate "patriot" of our western reserves, or the bold and tenacious Araucanian of Chili, or the Bedouin-like wanderers on the northwestern plains of the Argentine Confederation. Born in a sweltering climate, with impenetrable forests to defy even stealthy tread, with alternate deluge to drive him from his anchorage, the Marañon red man lives, as it were, apart from the nature which is contesting his natural right to soil and life. He is not a gregarious animal; but lives in detached families, or at most where two or three households are collected. He moves from his dirty hut to spear the fish, to overturn the turtle on the bank, or to enjoy the amiable diversion of stealing an additional wife or child from a neighbouring tribe; and is altogether totally negative in his virtues, though positive enough in his vices. The lazy stroke of the paddle is his only vigorous exercise, and, without the warlike virtues of the red man of the colder climes, his whole anatomy exhibits a heavy, flabby, unimpassioned physique, which has some effect on his case when diseased. The want of resistance to circumstances about him, the want of numbers, the want of mobility, as it were, has made the native Indian of the Amazon valley always appear as a stranger here on his "native heath."

Next in point of numbers is the white Spanish-Peruvian, who, with the Indian, forms various grades of blood-relationship; the white man being the trader or the governor of the district, and now and then the *padre*, of an uncertain extent of leagues up or down the rivers.

Rivaling these in point of numbers is the Brazilian or Portuguese trader, who makes his way up from the lower Amazon and locates at the various villages, intermarrying with the half-breed Indian, or bringing his family with him. The Portuguese are the most industrious of all the populations on the whole Amazon, and generally the most healthy. The energy of this people, wherever found on the Amazon, has often been the subject of remark, and they seem still to carry about the vim of a Vasco de Gama in their wanderings. The contrast between them and their kinsmen, the pure Brazilian, is very great. At Iquitos, which is the largest town on the low countries of the Marañon, or the Ucayali, and which is the government headquarters of the Fluvial Department of eastern Peru, are to be found seventy or eighty Englishmen, who are employés in the public workshops; some of them having their families with them—and they form the largest body of Anglo-Saxons on the whole length of the Marañon. Besides these larger groups of nationalities, is to be seen an occasional Yankee, who, by-the-by, does not appear in this district to be much of a developer of ideas of any sort; and a German here and there seems to be "looking out for a good opening," as also is the stray Frenchman. Of all these diverse representatives, the Portuguese and the half-blooded Spaniard-and-Peruvian seem to live more as though they were not striving against circumstances; the Indian appearing almost as foreign as the white Spanish-Peruvian; neither showing resistance to climate or inertia as well as the mestizos. Rarely may be seen a zambo[1]—the mixed blood of white and negro; but he is generally a stranger from the interior, or the Pacific coast, where his people make up a large class of labourers and soldiery. The Spanish-Peruvian, especially the children, are a singularly sprightly people, of high nervous excitability, spasmodic in their endeavours, but easily tired of work, mental or manual; they idealize a great deal, and have a good deal of the vague relics of imperialism of palmier days lingering about their pride and indolence. The Portuguese is dull, as regards *esprit*, but of toiling energy, and lives more uniformly and without the disposition to paroxysmal excitation of his conqueror.

---

[1] The "*zambo*" in Peru is the offspring of the white and the negro; but in other parts of South America this cross is known as the "*mulatto*," while the "*zambo*" properly is the child of the native *Indian* and the *negro*. Some in Peru use this latter cross to define the word "*zambo*," however.

In estimating symptoms of diseased action, these peculiarities of race must enter largely into the phenomena which any particular complaint may exhibit. In the Indian, the first impressions of sickness produce an apathy or inability to care for his own condition, which forms a troublesome part of the physician's care. Of course, where a stranger is the medical attendant, there is added to this constitutional apathy an extreme, though very natural, want of confidence in the stranger and his remedies, and it is almost useless to leave medicines to be administered—the doctor has to see them given in his presence if he wishes to accomplish anything.

Accustomed to the use of the native remedies of their forests, many of which are very efficacious in the tropical complaints, and looking upon a request to put out the tongue, or an attempt to feel the pulse, or any other cabalistic demand, as a species of sorcery different from their own and generally to be resisted to the death, the system of "heroic guessing" not unfrequently enters largely into the opinion one may form of the patient under consideration, especially where affections of the chest are supposed to involve a necessity for physical examinations. To this there is, in the case of the Indian, added unusual excitability of the nervous system, which lends to his want of confidence additional obstacles, and not unfrequently this compound of fright and nervous exaltation suddenly deprives the doctor of his patient, who may have incontinently put off for the "bush" to escape the "foul fiend," be it the disease or the "medicine man." The poverty of their diet, which consists only of dried fish and plantains, makes proper aliment impossible, and should a more appropriate diet be suggested, very likely the poor fellow returns to his homely fare all unmindful of bad consequences.

The excitability of the nervous system is observable in all castes of the native population, and the foreigner of some years' residence also notices this somewhat in his attacks of whatever disease. In the white Peruvian or Portuguese there is superadded to this nervous condition an ease with which the system seems to go down under slight attacks, and a great languor of strength and appetite in convalescence, which makes recovery tardy in this humid atmosphere, and the results often not as satisfactory as could be wished. Among the women of these races, their now and then irregular tastes, as regards unusual and unwholesome articles of food during convalescence, still further increase the trouble. In this connection it has occurred to me that probably here the universal custom of all ages, sexes, and classes of society, of the use of tobacco—by smoking—should be included as among the prominent depressing causes. The tobacco of Peru, which is that used by every one on the Marañon, is greatly stronger than the Virginia or the Havana, so much so as to make old smokers of these varieties completely and steadily nauseated for a long time after they try the Peruvian leaf. This tobacco, used mostly in the form of cigarettes, is the constant companion day and night of the Marañon people, particularly the whites and mestizos. Beginning at the early age of four or five years, this habit is pursued from dawn till midnight with an assiduity worthy of a better object. Before the morning cup of coffee is the cigar, and the last turning over in bed is to throw away the last cigarette. I have never seen among the most inveterate "chewists," or smokers of the "Old Dominion," a more thorough slavery to this "soft, guileless consolation" of the grown males—the young and the fair of our land, of course, being out of the question. It is difficult to believe that such powerful agents do not contribute to unnatural impressibility and tendency to depression of moral and mental as well as physical exertion, which in the tropics add to climatal causes of disease very considerably.

The women very commonly suffer from the results of ignorance and imprudence at the monthly periods, and leucorrhœa and uterine irritation are among the most frequent of the Marañon complaints, and with difficulty managed. The atonic condition of mucous membranes here, among other modes, shows itself in these and other blennorrhagic discharges. Often among children, especially females, at early ages of life, one encounters annoying fluxes, which give a good deal of trouble in their cure. Generally speaking, the prostration from attacks of disease is greatly disproportionate to the apparent violence of symptoms. And probably this is more to be noticed among the Anglo-Saxon element and his "cousin" of the United States than among the Latin descendants, on account of previous robust health and power of resistance to the usual causes of depression.[1] The Latin bends easily to the storm, but lives along, apparently, better in this depressed condition than the Englishman, who breaks up more hurriedly after he has once experienced severe disease: yet on his recovery he is

---

[1] It has long ago been observed that the foreigner stands tropical heats for a while better than the native; but that in the long run there is a progressive descent downwards. Statistics of a governor of Cayenne, in 1742, give the following mortality during his administration of that colony for a period of nine years.

Proportion in one thousand colonists.

| 1st year, | 2d, | 3d, | 4th, | 5th, | 6th, | 7th, | 8th, | 9th. |
|---|---|---|---|---|---|---|---|---|
| 15 | 19 | 42 | 21 | 60 | 75 | 82 | 102 | 125 |

In many cases allowance has to be made, however, for the character of the colonists, who are frequently the bad and abandoned, morally as well as physically.

more restored to his former condition than the Latin under equal circumstances.

*Skin Diseases* are entitled to rank first, not only from their frequency, but also from the obstinate character of their duration. They are grouped together by the people under the general name of "*Sana*," which includes every form of discolouration as well as eruption. These affections of the skin are due not only to the excessive labour of transpiration required of the porous surface of the body, which after a while debilitates it and produces an obscure irritation, leading to indolent ulcerations or eruptions; but they are also the irritations arising from the bites of myriads of insects which infest earth, air, and water. Among the natives, pure and mestizo, one will see the whole exposed surface of the body pitted with inflamed bites, to remedy which they use vegetable dyes, which go under the general name of "*Huito*," generally of a bluish-black or reddish color. These dyes, besides stopping the pores of the skin, are themselves irritating. It is, however, noticed on the Amazon that the red man of this river basin is a very slight sweater—a fact that has always attracted attention. One will sometimes find the skin of the Indian rough, hard, and insensible, like the skin of the larger lower animals.

Next to the Indians who suffer from these skin affections, are the English and Anglo-Americans, who bring to this moist country a well-toned system and appetite, and who generally have to pay a severe toll for a long time after their arrival by being the victims of numberless boils or ulcers about the person. This might often be avoided by lessening the amount of heat-making material which they too generally seem to think necessary. The Spanish-Peruvian or the Portuguese avoids this tendency best—the relaxed fibre, rather more regular and temperate appetite, and the thin-blooded nature of the race making him less susceptible to acute inflammation of the skin or abscesses; though there is a strong tendency to scrofulous sores and "cold abscess," among them, which are hard to manage.

Leprosy, properly so called, is a stranger on the Marañon, though it prevails largely in other parts of the great Amazon valley, near the mountainous districts of Matto-Grosso, and Minas-Geraes, in Brazil. The English or American generally recovers easily from this deranged condition of the transpiratory surface after leaving the climate, and here it may sometimes be considered a providential outlet which has saved some organ from a destructive inflammation. One of the most annoying of the skin affections is an itching of the surface of the body, apparently not attended by eruption, though the almost irresistible tendency to scratch the part affected will give rise to more or less superficial irritation. The hyperæsthesia of the skin is noticed more among the strangers, and gives the notion of a "prickly heat," without the eruption. It is sometimes intolerably annoying, not only from its itching, but from the dread one has that rubbing the part may cause irritable superficial ulceration. Ulcers resulting from the various skin irritations are apt to be indolent and difficult of cure, though in a healthy constitution there is no degeneracy in the type of inflammation. The old women cure these remarkably quick sometimes by the application of a compound of which the balsam of copaiba, recently gotten from the adjoining forest, is the principal ingredient. I noticed on the whole Amazon the frequent use of the copaiba as a stimulating dressing to indolent ulcers or half-healed wounds, and its good effects are of frequent occurrence.

Of all the diseases one encounters here, which is to be particularly noticed for being somewhat out of the general range of professional notice, is the strange one known as "dirt eating" ("*geophagie*," "*mal cœur*," "*mal destomes des nègres*," "*erdessen*," *&c.*), and noticed by the French more technically under the head "*cachexie aqueuse.*" In De la Chambre's "Encyclopœdia" the reader will find the subject fully and fairly treated of. According to some writers, this disease had its beginning on our continent in the palmy days of negro trading on the African coast, when it was transplanted to American shores, and it now enters as one of the chief endemic complaints of all tropical America, and at this distance of over two thousand miles from the sea, on the Amazon valley, where the negro is a rarity, being merely a waif from Brazil or the Pacific coast, it is the most important disease among the children and women of the country. Here, on the Marañon, the half-breeds are mostly addicted to the practice of dirt eating—neither the pure brute of a savage nor the more cultivated being so often the victims. Among that class, when it does prevail, it is a devouring passion, which is truly remarkable. Even strangers, English, or the white Peruvian, who have married with the mestizo, and have had children by them, find its presence among their little ones the plague of their life; and the accounts one hears about the tyranny of this habit of dirt eating on the victims of it would seem almost fabulous, were there not evidences all around one to give sanction to them. Children commence the habit from the time they are four years old, or less, and frequently die from the results in two or three years. In other cases, they grow to manhood or womanhood with the "appetite growing by what it feeds on," and I have seen here myself, in the case of a mestizo soldier, who was dying from the dysentery which generally, sooner or later, supervenes on this habit, the poor creature, half an hour before his death, detected with a lump of clay stuffed in his sunken cheeks, which he had dragged from the wall near where he was almost breathing his last. Officers here who have the Indian or half-breed children as servants in their employ sometimes have to use wire masks to keep them from putting the clay to their mouths; and women, as they lie in bed sleepless and restless, will pull out pieces of mud from the adjoining walls of their room to gratify their strange appetite, or will soothe a squalling brat by tempting it with a lump of the same material. If persisted in, the effects are surely fatal, at varying terms of years, some living tolerably to middle age, and then dying with dysentery, or from that disease at an earlier period. In the children dropsy is usually the most prominent apparent cause of decline and death.

Various have been the causes assigned for this unnatural appetite, and the obscure intervention of anæmia and decline. I have not as yet had an opportunity of detecting whether the nematoid worm, "*ankylostome duodenal*" is the *fons et origo* of this complaint, though its presence in the intestinal canal has been so repeatedly determined by observers that I feel assurred of its presence. Locally, among the people, one hears poor diet and a craving for a change urged by victims, as well as observers, as an exciting cause of this practice, and the presence of the worm would very naturally follow on a practice so dirty as this.

The sequelæ of this geophagy—anæmia and dropsy—are now, I believe, generally supposed to be consequent on the abstraction of blood from the intestinal walls. I do not know that the administration of vermifuges has ever been practised with a view of getting rid of these animalcules, and, as far as my own experience and observations go, the only thing done for this cachexia is the administration of astringent tonics, and the giving of advice about diet, which, however, amounts to little or nothing; the patients disappear after a greater or less time, disgusted with the stranger's physic and admonition. The unnatural cravings of a diseased appetite are often not limited to dirt merely, but the most *outre* articles that can be thought of—coal, cigar ashes, plaster—enter into their fanciful minds, and I was assured here by an officer that in the case of an Indian girl nearly grown, who was punished for the habit by being confined in a room where her meals were regularly placed, the paper about the walls, the straw of the mattress, linen hanging about, all seemed more attractive to her palate. The most fanciful suggestions of pregnancy—which was not her condition—could not have equalled this poor girl's deranged appetite. It is almost needless to add that treatment in this complaint is nearly useless unless the habit is corrected, and even then the system has been too much undermined often to make remedies of much avail in restoring either healthful looks or action in the economy. I am told that parents often encourage their children to smoke tobacco at the early age of five years, as it seems, they say, to do away with the fondness for dirt eating. They have never been able to give me a reason for this fact, nor do I find myself able to solve the question, except, possibly, on the ground of an anæsthetic effect on the palate, and depression of desire to eat anything. The habit of dirt eating obtains also largely in some of the Piedmont districts, many of the children and women from Moyobamba and Tarapoto, and other towns, coming here with this practice deeply rooted.

*Dysentery*, as an original disease on the Marañon, is of comparatively rare occurrence. It more generally appears as a sequela of the "geophagy." If original, it does not seem intractable, and is to be encountered oftener among the children or foreigners. On the lower Amazon, and on the Brazil coast generally, its rank, according to some observers, is next after phthisis. The moderate elevation of the thermometer in this tropical section, compared with it on the coast, the greater uniformity of the average animal heat, sudden changes, as before stated, being rare, the sparsely-settled nature of the villages not giving rise to such excesses from want of material wherewith to disturb the system, probably may be considered as operating causes of its rarity; though, as yet, the difference in amount of population on the upper and lower Amazon makes one liable not to take into consideration relative numbers in estimating frequency of disease. The total want of statistical information in this country makes the question of healthfulness somewhat uncertain, as yet. There is not in the dysentery itself anything particular to notice as regards symptoms or treatment. I have as yet seen no fatal case where the affection was uncomplicated with "dirt eating," or extreme imprudence in dissipation. The foreigners living and trading on the Marañon have enjoyed singular exemption from this affection. In children, the very common carelessness of parents as regards diet will account for most cases among the young.

After having in our earlier days read of the horrible jungles of the tropics, and later been lectured on the disasters of tropical residence in the wilds where the monkey, tiger, or anaconda alone is acclimated, the medical traveller is more than surprised at the infrequency of *Malarial Fevers* on the whole Amazon, in whose dense forests nature now "wantons as in her prime." Coming out to a section of the earth whose foreign reputation makes it apparently the home of everything pestilential in the way of febrile affections, the first thing he hears on the subject, on the lower Amazon, is the repeated statement of the rarity of these disorders on the main river, and as he travels west to the Peruvian territory on the continuation (the Marañon) of the same stream, the experience of those with whom he may have conversed on his way up assures him repeatedly of the truth, which after awhile his own experience in a great measure will confirm. He will also find that the native red man is less able to resist these malarial fevers and disappears more easily than the white or negro. But, when the wanderer leaves the main river and betakes himself to the higher grounds of any of the tributaries of this huge watery cormorant, where he begins to encounter rocky beds to the streams, rocky sides to the rivers, a comparative slight chilliness of air in the mornings and evenings, with a greater frequency of fogs, while the midday is a glowing heat—there begins the "*Terciana*," as the malarial intermittents are called.[1] In the interior, too, about the low grounds bordering the Piedmont districts of the Cordilleras, or on the water-courses of this section, these affections are also to be encountered. Excessive dryness and excessive moisture both seem to prevent the accession of the malaria. The interior wooded lowlands, through which the sun has not shone for ages, are as free from malaria as the mountain tops. Besides this unsunned condition which prevents evaporation, being one cause of exemption, the heavy rains and the flooding for several

---

[1] Bates, the naturalist, speaking of the healthfulness of the main river of the Amazon, and the country on the tributaries, says: "I began now to understand why the branch rivers of the Amazon were so unhealthy, while the main stream was pretty nearly free from diseases arising from malaria. The cause lies, without

---

doubt, in the slack currents of the tributaries in the dry season, and the absence of the cooling Amazonian trade wind, which purifies the air along the banks of the main river. The trade wind does not deviate from its nearly straight course west, so that the branch streams, which are generally at right angles to the Amazon, and have a slack current for a long distance from their mouth, are left to the horror of nearly stagnant air and water." This may apply, possibly, to the lower Amazon, but on the tributaries of the alto-Amazonas, where the currents are stronger all the year round than those lower down are at the rainy season, you find the intermittents to prevail—nor is the trade wind either as certain or as strong as below. And it may probably be true that the borders of the Amazon are constantly kept swept by the rising floods, which carry off the decaying material which might engender the malaria. It seems to me that with the impenetrable mass of vegetation as ramparts, as it were, on the banks of the Amazon, and for leagues to the interior, the trade wind could make little success in getting through this to ventilate the shores at sufficiently low an elevation from the river margin to prevent malarial emanation from affecting those who would necessarily sleep or work a very few feet above the level of the stream itself. It is a fact noted both by Darwin and Humboldt, in their travels in Peru and other tropical places, that there was to be encountered a greater prevalence of malarial emanation in those districts where there was a dry soil, generally sandy, short grass growing thereabouts, and stagnant pools, as about Arica, Callao, Vera Cruz, Carthagena, and such like localities. It may, therefore, be, that, toward the headwaters, or the higher inland regions of the Amazon tributaries—the dense foliage of the main river not being so great, the sun being able to penetrate the forest growth, while at the same time there are present, from the immense rain fall in these situations, as on the river margins of the main stream, lagoons which never are washed out or dried up entirely—the same conditions would obtain as in the places referred to above, the actual temperature also being raised by the arid and often sandy nature of the soil about these localities.

The island of Marajo, at the mouth of the Amazon River, is about the size of the State of Rhode Island or larger. The northwest, north, and west sides of it are low savanna lands. On the south, southwest, and southeast, the country is densely wooded with tropical growth. Some years ago, a town existed on the north side, but the unhealthfulness of the place was so fatal that it was broken up as a commercial port altogether, while Pará, to the south and west, on the opposite or south side of the river, is free from local fevers (excepting occasional epidemics of yellow fever). It may be possible that the northeast trades blowing to the southwest towards Pará, may be purified by having to pass through the dense rampart on the southwest side of Marajo. Pará itself is situated on the south arm of the Amazon, or the Pará, river, as it is known locally, and is surrounded by the virgin growth of the tropical forest all about the place. The prevailing winds there are northeast.

months, which carry off the decaying material, and the washing out of the surplus stillwater lagoons, must, probably, be noted as among the partial causes of healthfulness. This decaying vegetable matter clogged with mud is deposited in the main stream, where it is hid from the sun's power, and the air preserved innocuous.

However, in speaking of the freedom of the main Amazon from fevers, one must exercise a little reserve now and then, on account of the inability to get at the true condition of things among a native population which probably suffers and dies without our knowing it, in the nooks and corners of the Amazon, where the unsettled nature of the country does not admit of a true estimate of facts being obtained ; but for the larger populations in the villages, frequent talks among the oldest residents will elicit approximate truth. During the early part of the present year, for instance, there was quite an outbreak of "fever" among the natives on the low countries near the mouth of the Amazon, some fifty or two hundred miles above Pará, and so grave was it that it attracted the notice of the Pará press, which was petitioning the government to have medical aid sent to relieve the poor creatures; and last year, during the month of September, when the writer of this article passed up the river and happened to be detained at the plantation of a Portuguese, some one hundred and seventy miles above Pará, he was informed by the proprietor that for the last two years there had existed in that section of country, though not immediately in the vicinity of his place, a larger amount of malarial fevers than had ever been known before; and some few cases came under the writer's observation which were decided and severe bilious remittent fevers. At the other places stopped at on the way up to Peru—some eight or ten—nothing was heard of unfavourable to the general reputation which the Amazon enjoys in reference to the subject of malarial disorders.

At the villages on the Marañon and Ucayali the testimony to the freedom from "terciana" is constantly repeated and believed, and also on the Huallaga, as high up as Urinaquas—the highest point for steam navigation—at Borja, on the Marañon, where the sierras begin, it is to be encountered. In the village of Iquitos, the largest on the Marañon, being composed of a population of some 2000 souls, Indians, whites, mestizos, of Spanish, Portuguese, and English blood, in the last year I have not encountered a single case of terciana originating here, and the same testimony is given by the government physician. There have been some cases of reaccession of intermittent fever in those who have come here at varying times from the region of malaria about Borja, high up on the Huallaga, or other tributaries of the Marañon. The past experience of intelligent citizens here seems to confirm this statement.

The villages of the Marañon, of which Iquitos is the largest and most advanced, are situated immediately on the river, above the limit of high water—at Iquitos the rise of the river is about thirty feet at most—and here the woods are cleared away, merely just far enough to enable one to put up his cane-sided and thatched-roof houses, while the thick-growing vegetation disputes every inch of ground with the colonist. The so-called streets generally, and more especially at the high-water season, enjoy all the dirty appearance of marshy positions, out of which hundreds of frogs make night hideous with their solemn noise, while an occasional small alligator or water-snake looms above the grassy pool. Yet, notwithstanding this, the people sit out in the open air at all times of night to flee from that pest of the Marañon, the mosquito, which will not let them read, write, or hardly live by a candlelight. The little babies and their mothers squat on the ground on mats or in the dirt, and entertain the passer-by, and not an ague after all this.

To this general history of the Marañon fevers, there has this year occurred a notable exception, the first in the memory of the "oldest inhabitant." In June, report reached Iquitos, that an epidemic of a "strange fever" had appeared at a village of some two hundred Indians, called "*Paranari*," located some two hundred miles above Iquitos. The place is located immediately on the river, the elevation above high water just sufficient to avoid flooding, and has a very porous soil, which allows very rapid drying after even hard rains, and immediately surrounded by forest growth, in all respects, as regards that, like Iquitos.

The account I had of the epidemic is that furnished me by a white governor of the place, who brought his mestizo wife here for treatment, ill with the epidemic. The Indians at first judged it to be terciana, but found themselves disappointed in the failure of their native remedies. Becoming, then, panic-stricken, those who were not attacked fled to the woods, and many of the sick died, probably as much from neglect as from the disease. My informant has in the last few weeks received news from there that all the Indians had fled excepting two half-grown boys, one of whom died after the abandonment of the place.

From what I could gather, there must have been a singular severity of symptoms. Great fever, characterized by intermissions in some cases; the appearance of external abscesses in various parts of the body; the expectoration of blood, in some cases profuse; rapid supervening delirium, preceded by violent headache. The wife of the governor I found, on her arrival here, suffering from intermittent febrile symptoms. She had also several abscesses in various parts of the body, and there was a profound debility, a sense of sinking which was very disagreeable, and very marked anemia. In her case the disease began with chills; diarrhœa was also one of her first symptoms, previous to my seeing her, which, I was told, was followed by bloody evacuations, without the other symptoms of dysentery however. I was told that death in the fatal cases supervened in some four or five days generally. Her attack had lasted some three weeks when I saw her. On her first getting better she started down the river in a canoe; but the exposure caused a reaccession of the fever, which was intermittent, and she remained a few days at a village some one hundred miles above Iquitos, and took passage in the steamer for this latter place, where she has somewhat regained her usual health, after a protracted convalescence which has been interrupted at times by slight febrile manifestations attended with the disagreeable feeling of emptiness and sinking referred to the pit of the stomach, which did not follow any unusual nausea, however. I have not been able to learn anything as regards the mortality in this epidemic. The whole affair has been one altogether without precedent on the Marañon.

In July of this present year there prevailed in Iquitos an epidemic of influenza, of which there were some two hundred cases, none fatal. It lasted some two months, and was the first noticed on the Marañon. The marked beneficial effects of quinia, which seemed in fact the only drug which made any impression on the symptoms, which had a remittency about them in most instances, has induced the opinion of the malarial febrile origin of this demonstration of one of the neuroses. The pain in the temples, especially among the women, sometimes became torture, nervous susceptibility in most tropical complaints being an element more pronounced and more difficult to combat than in our more temperate climes. The disease under notice appeared indifferently among all ages, but more noticed among the women, especially the mestizo class of the community. The epidemic disappeared about the last of August.

In the last few days (October 10) there has appeared here in Iquitos another epidemic form of disease which has been characterized by the following symptoms, mentioned in order of frequency: constipation, frequently most obstinate; abdominal and epigastric pain, the former more frequent, lasting for days, more frequently *preceding* the constipation, coming on at intervals of a few moments, generally most severe, causing the greatest suffering, men sometimes crying from the pain; in some cases, after shifting about for two or three days, the pain would locate itself apparently about the umbilicus, and very little benefited, and in no case permanently, by administration of opiates; *thirst* in nearly all the cases, in some it was extreme, the patient suffering from it; at times the taking of the smallest quantity of water induced eructations almost immediately, and increase of pain; *fever* present in most of the cases, increasing or appearing only at evening, in some there was no distinct febrile manifestation; *urine* high coloured in all the cases; *conjunctiva* yellow, sometimes early in the attack, generally more pronounced as the patient began to *recover* from his pain and thirst; *vomiting* frequent, persistent, not permitting remedies to rest on the stomach, the vomited matters consisting of bilious-looking fluids, and sometimes apparently pure bile; when there was no decided fever in the case, the pulse was perfectly natural; *flatulence* supervened early, most difficult to relieve and frequently the cause of severe pain, eructations being attended with momentary relief. As the cases became relieved of their acute symptoms, there supervened an icteric condition of the surface, with slight headache. Convalescence has been very tardy, it being difficult to restore the appetite, everything being unpleasant to sight and taste almost.

In the first two or three cases the symptoms which seemed to be neuralgic partly, would have almost led one to believe in the presence of lead poison, so nearly were the features allied for a time, had there been any possible way for such a cause to have been assigned. In the very large majority of cases there were prodromata—anorexia, languor, ill-defined headache, sluggishness of the bowels, and slight discoloration of the conjunctiva.

Among the most common of the painful complaints of the Marañon are severe colics, arising from the ingestion of large quantities of indigestible foods, but which disappear after a few hours under the administration of emetics and calming agents; and at first, some of the symptoms of the present epidemic were somewhat associated with this other feature of the ordinary causes of suffering, but the sequel showed the cases bore no "relation of causation."

Gastralgia, as a symptom of dyspepsia, is very common on the Marañon, especially among the women, some of whom suffer from it for years, the result of any possible imprudence in diet and drink. In the treatment, after the uselessness of opiates had been observed, though there was great toleration noticed, the use of quinia was continued for two or three days regularly as an antiperiodic, in view of the paroxysmal character of the pain, as well as the frequent febrile increase towards evening, and the effects were most happy, the pain itself finding relief, as also the constipation; and also the stomach, which seemed to tolerate that remedy when nothing else would remain. Fomentations to the abdomen were perfectly useless; after the violence of the gastric pain had disappeared, but when there was still a gnawing, disagreeable oppression at the epigastrium, very small blisters to the pit of the stomach were excellent. Clysters were serviceable in the lingering costiveness after the severity of the disease had passed. In convalescence there was, in many cases, noticed a feeling of numbness about the abdomen, a feeling of deadened sensation. Calomel was, after the first few cases, given in conjunction with quinia, to relieve flatulence by stimulating digestion, and by preventing decomposition of whatever food might be taken; it also seemed to contribute to laxative effects; and although, from the materials at first vomited, it would seem that the liver was sufficiently stimulated, it was evident, by experience in these cases, that mercury was most successful in its results. The success which followed this medication with quinia and calomel is the best argument in their favour, the relief being steady and unexceptional.

It may be stated that tympanites, which appeared after the disease had existed two or three days, was not relieved by any of the usual carminatives given for such purpose. Relief to the abdominal pain was frequently momentarily obtained by bending the body forward, or pressing the hands against the seat of pain. Belladonna and hyoscyamus were now and then given to prevent any griping action of the quinia or calomel. In some of the cases, especially where the patients had previously suffered from attacks of malarial fevers, quinia was the only medicine given in the attack. To restore the apparently paralyzed condition of stomach and bowels, the effect (or, possibly, in some cases, the cause) of the prolonged constipation, or the effect of great dilatation from flatulence, after the patient had "weathered the gale," the combination of strychnia and quinia was found very efficacious; these preparations were also used in conjunction with the various forms of iron. It was found difficult sometimes to rid the patient of the feeling of physical depression referred to the epigastrium, and the appetite was extremely capricious. Convalescence was no doubt much hindered by the very debilitating effects of the moist heat of this climate.

With this somewhat diffuse account of the present epidemic, in which, out of some twenty-five cases, all occurring within twelve days of each other, with the strongest possible similarity of symptoms, there was no fatal one, it may be suggested whether any causal relation links it with the preceding influenza, or the somewhat obscure state of health at Paranari. I have just learned from a young Peruvian who came here from the port of Urimaguas on the Huallaga, that cases, similar to those here now, had occurred there, and at Balsa Puerto, a small village some three days' canoe travel up a small stream to the westward. This young gentleman came here sick with the complaint, and his was a case in which the neuralgic pain about the abdomen was the most severe and protracted, causing him, at times, to beg his medical advisers to give him something to put an end to life, rather than he should suffer; his shrieks from pain were heard in adjoining streets even. One or two cases had occurred here before his arrival. He reported that some of the cases had proved fatal at the points referred to above. There has been no fatal case here, however. In the case of this young man, there was a good deal of agitation; he would sometimes be perfectly quiet while the doctors were preparing medicine at the bedside, and even their presence would act in calming him for a while; a dose of calomel and quinia, seven grains to five, had a remarkable effect the first time it was tried in arresting the pain; the quinia being continued every three hours without any regard to febrile accession. In no case has any headache been annoying. The evacuations for a few days after the bowels became moved were almost tarry in colour and consistence.[1]

Incidentally it may be mentioned that at Pará, and at one or two points some two hundred miles up the Amazon, there has been prevailing, since June, a sharp epidemic of yellow fever.

Among children, the presence of worms is considered almost universal; and among the grown they are also much more frequently seen than I have elsewhere noticed. The number of these, sometimes, is almost beyond belief, and the wonderful power the little victims have of getting along with such tenants is truly surprising. They are, as far as my observation and experience go, easily gotten rid of by the use of *santonin*, which some parents make one of the usual articles to be kept in the house, to be given twice or three times a month, whether the children complain or not. The plan seems to answer well enough. The want of care in preparation of food, the general negligence of domestic hygiene, the habit of dirt-eating will all sufficiently account for the presence of these parasites. I am disposed to think that in some cases of icterus, or in some of the severe colics, the presence of these animals lodged in the biliary ducts is to be more than suspected. During both of these complaints the discharge of worms by vomiting is not unusual. In a case which occurred here, in the person of an Indian, the rapid supervention of coma and icterus, within six hours after an accession of pain at the epigastrium, led the medical attendant to suspect the entrance of worms into the biliary ducts; unfortunately the superstitious nature of the half-caste and Indian did not allow of the diagnosis being confirmed after death, which took place in twenty-four hours after he was attacked.

*Cold Abscesses* are very frequent, the result of constitutional taints, improper alimentation, and general depressing agencies. They are found mostly among the Indian population, and locate themselves among the muscles of the limbs or in the iliac fossa, where they linger along for months, sometimes. When they become mature the amount of pus which is discharged from them is sometimes almost incredible. Those who are subject to these drains on the system frequently become more than usually robust after the discharge ceases. The pus is *not* usually thin. The Indian physique, though generally more than usually good as regards form, rounded outline, symmetry of proportion, is by no means a robust one. Handling the muscles of the limbs conveys to the touch the feeling of flabbiness, as though the bones were cushioned with fat rather than with the sinewy fibre of the red man of our Western fields, or the white man of cooler climes; and this superiority of form, which in the women of pure blood is superior to any I have ever seen in our own land, is no index whatever of strength or activity, and under the exhausting suppuration of these abscesses this physique acquires rather an ungainly appearance.

---

[1] The reader will find in Grisolle's *Pathologie Interne*, under the head of *La Colique Végétale*, which is synonymous with *Colique de Madrid, de Poitou, de Cayenne, de Surinam, etc.*, the symptoms detailed as were experienced here. And one of the authors there referred to, M. Fonssagrives, suggests whether "cette singulière affection ne se développerait point sous l'influence des miasmes analogues ou identifiques avec les miasmes palustres." Grisolle seems to more than question the probability, and thinks that the "colique sèche n'est qu'une colique de plomb." The epidemic, as it appeared here, is so thoroughly freed from any suspicion of such a cause, that I cannot but be convinced of M. Fonssagrives's correctness in suggesting malarial febrile causes as producing the symptoms, and that the nervous susceptibilities of the tropics will sufficiently account for any unusual amount of pain or great debility consequent on the attack.

I may mention that I had not read the article in Grisolle until after my remarks in the text were written. Since then other cases have occurred, following the same course, and getting well under the same treatment.

The usual preparations of iodine do not act as efficiently in these tropical districts in resolving the tumours and threatened abscesses, as may be observed in our own colder latitudes. There seems to be a too deep-seated cachexy in the system for the alterative action of such remedies. It seems best to let nature rid herself of this depressed form of irritation, and the discharge does not injure the health materially, as a general rule. Among the Anglo-Saxon foreigners these collections of pus are not nearly so formidable, either from chronicity or abundance, as in the native or the Latin resident.

*Trismus Nascentium* is to be encountered here with some frequency; but in most cases the little one has died without the medical attendant having seen it, and one hears a vague account from the parent. These convulsive diseases are frequently to be set down to the extreme imprudence of the mother in exposing her offspring unnecessarily—ophthalmia also resulting from this imprudence, though it is astonishing what a profuse suppuration they will bear without having the eye or the sight affected, it being rare to find the cornea or the humours of the eye implicated in these affections. The infant is bathed directly after birth in cold water, and this cold application is kept up as part of the daily regimen. Few or no precautions are taken to keep it off the damp ground, day or night, and the little scamp kicks and rolls about for hours on his damp mother-earth; or, slung behind their mothers' backs in a shawl, they are carried about with them in their visitings at all times of day or night. It is rare for them to "take cold," apparently, and they often thrive, in spite of book-wisdom, until the age when dirt eating begins, or longer, if they should not acquire that vice.

From repeated abortions, accidental, or possibly more frequently induced artificially, it is rare to see more than two children brought up by Indian or mestizo parents, or in the households of the whites who live unmarried with them. These abortions result from want of affection—too little and too great luxury and enlightenment seeming to be equally unfavourable to the development of maternal love—and from the system of concubinage which prevails so extensively on the Marañon among the whites, Indians, and mestizos, where the uncertainty of possession of partners makes the female dread the probability of her keeper leaving her with a large family on her hands which she does not care to look out for. The frequency of uterine complaints, as a consequence of these unnatural attempts, produces sterility, or continuous bad health among the women; and the population of the Marañon derives little or no increase from a license as regards mistresses, which defeats the only possible object of its toleration—an increase of inhabitants. The very great imprudence of the women at the time of their menstrual flow often results in complaints which tend to chronic bad health and sterility, to which their medication not unfrequently also tends.

The *lymphatic glands* easily become the seat of suppuration, and it is somewhat the rule for the Anglo-Saxon to go through a course of axillary or inguinal induration and suppuration, which appears to be a sort of acclimating process, for a little while after he arrives out. The system recovers itself easily. It is rare to find the Anglo-Saxons having dysentery, nor does their appetite fail them materially—and generally they are the authors of their ills in this climate. The want of variety in diet is, among them, as also among the natives, a constant subject of complaint, and the unalterable scale of dried fish, plantains, and the disagreeable "charapa" (the turtle of the Amazon) is considered as the author of most of the sufferings of the Marañon people.

Among the eruptive fevers, the *smallpox* now and then has made its appearance among the villages on the Marañon, and played sad havoc among the Indian population, who wither under its presence. Some three years since it spread on the margins of the Ucayali River, and last year, when the writer was on this stream's whole length, it was a rarity to see a hut or village. The Indian, when taken sick, believes that the demon of evil is the malicious spirit of some personal enemy, and if the invalid dies they burn up his huts, bows, and arrows, in fact everything he owns, and move off as far from the supposed bad genius as is possible. During the epidemic among them whole sections of country became entirely deserted; the sick were left to die uncared for, or death was anticipated by throwing the sick in the river, while numbers perished from the frantic wish to rush into the water to relieve the intolerable heat of the body. No system of vaccination has been pursued by the government or the communities where the whites live, and a "happy-go-lucky" theory presides over the destinies of village life on the Marañon. The variola makes its way from the interior towns, such as Moyobamba, Tarapoto, to which the Ucayali and Marañon Indians make their way to trade in fish, wax, sarsaparilla, curiosities, &c.

Some five or six years ago an epidemic of dysentery prevailed here in Iquitos; but those who were here then—which was some three years after its foundation as a government place—have given me no satisfactory account of numbers, or character of the complaint. Epidemic dysentery, some time in the last century, also made its appearance about the country of the *Cerro de la Sal*, near the head of the Ucayali River, and, according to the manuscripts of the old Franciscan friars, it desolated the district for some years.

Such is a brief sketch of what the medical wanderer encounters after a short stay among the native and foreign population of the basin of the Marañon and Ucayali Rivers.

In this retrospect, possibly there will be found some prominent differences between this section and the tropics of the East Indies. The terrible dysenteries, the disastrous fevers, and the extreme derangements of the liver, among the Oriental sojourners, are never encountered here, under 3° south latitude, with a tropical forest embracing thousands of square leagues. The difference may be ascribed, probably, to the fact of a less elevated annual heat, which does not reach above 26° C.; to a greater uniformity of temperature (the result of a want of violent and prolonged changes from variations of winds of the Amazon basin); the usual gentle northeast breezes, not often being varied by the cold southeast winds, which latter only appear, at most, three days at a time, and that but very rarely. And it has occurred to me that this whole Amazon valley, more especially the Marañon portion of it, in its comparative uniform temperature and humidity, resembles somewhat a marine climate as regards its atmosphere, but without the liability of gales at depressed temperatures, which may in some measure account for its greater healthfulness when compared with other tropical river basins. Whether, in years to come, when these tropical forests are thinned by the immigrant, and the sun breathes all its fire on large cleared districts, with the necessary results of violent and sudden changes of wind and rain, and when the plough or the dredging machine which makes progress, may not also turn up malaria in its delving, "it were curious to consider." Yet, as remarked before, one must,[1] in estimating comparative health, take into consideration the relative number of inhabitants in the Amazon basin; their scattered locations; inaccessibility; paucity of numbers of the white races; and the little really that is known by the traveller in this part of the world of the state of health of the peoples who, hid away here and there in the wooded recesses, die and leave no sign by which to tell of their diseases or of the numbers who have perished; or of how the survivors pass their existence, whether in suffering, or in robust health.

---

[1] It is a well-known fact in tropical South America that the dwellers of the mountains stand the change to a lowland climate much less healthfully than the foreigner of whatever nationality. I have been told by an intelligent Ecuadorian physician, Dr. R. Suarez, formerly of Quito, that the "*Serrano*"—mountaineer—who goes to the Pacific coast to trade is very liable to die there, and that it is difficult sometimes to persuade them to undertake expeditions either to that lowland country, or to the borders of the river Napo, which is the outlet of Ecuador to the south and east.

In looking at tropical populations it will be noticed, especially in tropical America, that, though the Anglo-Saxon enjoys a fair share of health, the Spanish and Portuguese races seem to be the natural man-animal of these countries, appearing even more self-sustaining than the Indian himself, not only by an intellectual development, but by a power of physical resistance to climatal depressions. And, in accounting for this adaptation of the races to the "*tierras calientes*," or lowlands, of the tropics, it appears to me that the following suggestion of an ingenious French medical writer might very well be worthy of attention. After showing that the blood of the southwest peninsula of Europe is the complex resultant of numerous Indo-European branchès allied with the primitive Iberian, which probably first came from Chaldea, with the Semitic about Carthage; and with the Moors of Africa, he goes on to say, "Par ses origines, on peut affirmer que le sang Africain a été par trois fois largement infusé dans les veines Espagnoles, et que la température elevée de cette peninsule a dû conserver à ce sang sa facile adaptation aux climats tropicaux. Ne doit-il pas aussi à ces sources Africaines une entente plus cordiale avec le nègre." * * * It is not impossible that the gradual colonizing of the Amazon basin by the Anglo-European or North American will, in time, give rise to a cross with the mestizo or the tropical Latin, which will still further continue to better the future of these inter-tropical jungles. It is true, probably, that rapid migrations cannot be durable or prosperous where the colonists come from a different isothermal zone and retain their blood intact; but crossing with the natives, all things being equal, will favour and accelerate acclimation.

The following is an abstract of a register of weather I have kept in Iquitos, for the months named in 1871. French measurements are those used.

| | April. | May. | June. | July. | Aug. | Sept. | Oct. |
|---|---|---|---|---|---|---|---|
| Average of thermometer . | 26°.2 | 26°.1 | 25°.8 | 24°.9 | 26°.1 | 26°.2 | 26°.7 |
| " " barometer . . | 75.43 | 75.49 | 75.57 | 75.62 | 75.53 | 75.48 | 75.38 |
| " " W. bulb . . . | 24.5 | 24.4 | 24.0 | 23.0 | 23.6 | 23.8 | 24.0 |
| Direction of winds . . . | N. E. | N. E. | N. E. | S. & E. | N. | N.W. | N.W. |
| " " storms . . . | N. | N. E. | N. E. | S. E. | S. E. | S. E. | N. E. |
| No. of rainy days . . . | 17 | 13 | 16 | 11 | 10 | 8 | 14 |
| Highest day aver. of ther. | 27°.5 | 27°.9 | 28°.1 | 28°.1 | 28°.3 | 29° 6 | 28°.7 |
| Lowest " " " | 24.4 | 24 2 | 23.3 | 19.4 | 20.6 | 22.2 | 24.4 |
| Highest record of thermom. | 29.3 | 30.2 | 29.4 | 29.5 | 30.4 | 32.4 | 31.0 |
| Lowest " " " | 23.6 | 22.7 | 21.2 | 18.8 | 19.6 | 21.4 | 23.8 |
| Highest record of barometer | 75.72 | 75.86 | 75.80 | 75.99 | 75.88 | 75.83 | 75.66 |
| Lowest " " " | 75.12 | 75.17 | 75.26 | 75.32 | 75.24 | 75.08 | 75.03 |
| Highest day aver. of barom. | 75.59 | 75.74 | 75.72 | 75.94 | 75.71 | 75.71 | 75.51 |
| Lowest " " " | 75.31 | 75.33 | 75.44 | 75.43 | 75.30 | 75.29 | 75 20 |
| No. inches rain . . . . | ... | ... | 3.13 | 4.27 | 3.94 | 9.33 | 7.57 |

## Art. VIII.—*Extirpation of the Entire Parotid Gland for the Removal of a Fibroid Tumour in that Region, with Ligation of the External Carotid Artery and Jugular Vein, and Division of Portio Dura Nerve, etc.* By J. H. B. M'Clellan, M.D., of Philadelphia.

The subject of this case was Miss J., thirty-two years of age; a native of Philadelphia; otherwise perfectly healthy, and apparently of a sound constitution. Three years previously, in April, 1868, I had removed a tumour the size of a hen's egg, somewhat lower down the neck, but still projecting over the parotid region. The patient attributed the tumour to a blow received on the side of the neck from the sudden shutting of a door, and which had caused her great pain for a considerable time afterwards. Some six weeks later, a little lump, the size of a pea, was felt, which increased slowly up to the time of the first operation, which was thoroughly performed in the presence of Drs. Wm. Byrd Page and Edward Shippen.

Miss J. enjoyed good health after the first operation until the expiration of two years and a half, when it became apparent that the disease was returning. On careful inquiry, I learned that her parents on both sides had been healthy, and no traces whatever could be discovered of specific disease in her family.

The second tumour grew very rapidly upwards over the cheek and behind the right ear, forcing this organ considerably from its normal position, and extending downwards and backwards towards the sterno-cleido and trapezius muscles, causing much pain from the distension of the parts.

On examining the throat internally, the encroachment of the tumour could be plainly seen by the displacement of the half arch of the palate on the corresponding side, and easily felt by the finger; whilst externally there was considerable distortion of the countenance, and facial expression from the pressure of the tumour on the muscular branch of the fifth pair of nerves. Prior to the operation, the unadvised application of a sorbefacient had very much inflamed the surface of the tumour, and rendered the skin and subjacent parts involved of an unhealthy and engorged appearance.

The operation for removal of this "enormous growth was performed, October 4th, 1871, in the presence and with the assistance of Prof. Jos. Pancoast, Drs. Wm. Byrd Page, Edward Shippen, and Dr. Geo. M'Clellan. The patient having been made aware of the dangers connected with its removal, and having been fully informed of the risk of a recurrence of the disease in the future, insisted upon its being immediately undertaken. She was thoroughly etherized, and kept in an insensible condition steadily throughout the operation.[1]

The first incision was commenced at the upper and posterior portion of the tumour, beginning with a straight line from the lobe of the ear, and afterwards carried in an elliptical curve around the mass, about five inches in length, to its lower extremity. A corresponding incision was made on the anterior or facial side, beginning and ending at the same points. The tumour was then carefully dissected from its cellular attachments more by the handle of the scalpel than by its cutting edge—making free use of the fingers to tear or separate the mass from its surrounding connections, for fear of hemorrhage before the main supply of arterial blood could be reached; working steadily in this way towards the lower extremity of the wound. The attachments of the digastric muscle, especially its posterior belly, being separated, the external carotid artery was immediately found and secured. The main danger of hemorrhage being thus under control, the body of the tumour was wrenched from its bed by the fingers and hand, and turned upwards and outwards over the face. A stout ligature was then applied around its base, and the upper portion was carefully dissected from the cartilaginous portions of the meatus auditorius, and from the zygoma to which it was closely adherent. But two large vessels were found to require ligation after securing the carotid; but there was considerable superficial bleeding from the recurrent circulation. The deep jugular vein was so much exposed and denuded, that it was deemed expedient to pass a ligature around it; lest the subsequent discharge might produce injury to its coats. The branches of the portio dura nerve ramifying through the parotid gland, were necessarily severed, producing instant paralysis of the lower eyelid, the corner of the mouth, etc. The depth of the wound was shown by its extension far beyond the styloid process, which could be felt and seen denuded of its muscles, and its contiguity to the sides of the pharynx. The wound was left open for a considerable period, to guard against any immediate hemorrhage. All exposed nervous filaments were retrenched, and, after repeated examinations, every suspicious particle was carefully removed. The parts were then closely brought into apposition by means of silken sutures; the ligatures around the vessels being allowed a free opening at the bottom of the wound, so as to admit of unobstructed drainage throughout the healing process. A piece of lint spread with oxide of zinc ointment, and mixed with carbolic acid, was applied over the entire surface, kept in place with a compress by a double roller carefully adjusted around the head; and this was retained for four entire days without removal, and with but very little inconvenience.

---

[1] Ether was preferred by the operator, as the operation might necessarily be a protracted one.

The pressure was then removed, and a light, loose dressing of lint, covered with the same ointment, substituted, and changed daily during the free suppuration, which presented a healthy character. The patient experienced no severe shock, and but little pain or trouble in comparison with the magnitude of the operation; complaining at first of difficulty in swallowing, and soreness of the throat—undoubtedly caused by the nearness of the wound to the pharynx—which soon passed away, and she was able to partake of good, nutritious diet, and only complained of the confined position which it was thought best to have her maintain until the coming away of the ligature was completed.

On the fourteenth day after the operation, there was a slight venous hemorrhage, which was easily stopped by pressure, and seemed to be caused by a change of position. An abscess was discovered on the day following, which began to discharge upwards from the bottom of the wound. Its situation seemed to be distinctly confined to the triangular space between the two insertions of the sterno-cleido-mastoid muscle. At first the discharge was tinged with blood, probably owing to contamination from the previous bleeding. An injection of diluted carbolic acid speedily changed its character into clear yellow pus, and, an opening having been made just above the clavicle, at its most dependent part, the discharge was kept away from the original wound. The ligature around the carotid artery came away on the *seventeenth day*, and the patient was allowed to sit up in bed. On the twenty-sixth day after the operation, a second venous hemorrhage took place, and was of a very alarming quantity. No certain cause could be ascribed for this. And it was, like the first, followed by an abscess, this time extending some distance below the clavicle, without any definite circumscription. This was also punctured at the most dependent point, and the large cavity washed out with carbolic acid diluted. The patient, being very much depressed in spirits by the alarm caused by the large loss of blood, was encouraged to be dressed and walk about the room, as all danger of hemorrhage from the ligated vessels was by this time impossible; she soon rallied in health and spirits. The discharge became perfectly healthy, the wound speedily filled up with granulations, the surface rapidly cicatrized over, and she was soon able to leave the house and take exercise in the open air.

It is now eleven months since the operation was performed, and Miss J. is in as excellent state of health as she has ever enjoyed; the scar being very much diminished and healthy in appearance, showing no indication whatever of any likelihood of a return of the morbid growth which so greatly disfigured her, and so fearfully and speedily threatened destruction of her life.

In a previous case in which I operated, in April, 1845 (vide *Notes to M'Clellan's Surgery*, p. 334, etc.), the very great extent of the tumour necessitated the ligation of the *internal carotid*, as well as the division of the *par vagum*, or *pneumogastric* nerve, and also the *spinal accessory*.

The patient entirely recovered without any bad effects from the division of the *pneumogastric* nerve. This only can be accounted for on the supposition that the pressure of the tumour had *already destroyed the function of the nerve cut*, and that nervous connections, or anastomoses, enabled its symmetrical companion to perform its office.[1]

## Art. IX.—*Spinal Contusion with Fracture of Femur, resulting from a fall from aloft; Recovery.* By Wm. A. Corwin, M.D., Assistant Surgeon U.S.N. (Communicated by the Surgeon-General U.S.N.)

Henry Crowin, an ordinary seaman, twenty-two years old, fell from the main truck of the flagship Colorado, a distance of nearly two hundred feet, on January 25, 1872, while that vessel was lying in the harbour of Hong Kong, China.

He was engaged at the time in "blacking down the main royal black-stay," which procedure necessitated his swinging himself from the stay, a medium sized wire rope, leading down, almost perpendicularly from the truck to the side of the ship, and it was at the moment of his attempt at swinging from the stay that the accident occurred, the poor fellow sliding down the slender rope with fearful velocity. Breaking, in his descent, one or two small lines, which led from the stay, and which parted like burnt tow under his weight, he struck the hammock netting, and rolled from thence to the deck, some twelve feet below.

---

[1] *Vide* M'Clellan's Surgery, 1848, edited by Dr. J. H. B. M'Clellan, notes to pp. 331, 332, 333, 334, 335, 336, and 337. Also, first edition of Velpeau's Operative Surgery, 1846, pp. 427–8.

Passed Assistant Surgeon Wells, U.S.N. and myself, saw the patient immediately, and found the following injuries; an oblique fracture of the left femur at its middle third with what we afterwards determined to be severe contusion of the spinal cord; in addition to which, the right shoulder was badly bruised and various other bruises and abrasions were found on the arms and legs.

Spinal contusion was diagnosticated from the existence of pain and exquisite tenderness on pressure, over the third lumbar spinous process, coexisting with total loss of motion and nearly complete absence of sensation in both lower extremities, the loss of sensibility being marked in the skin of the perinæum and scrotum. We could obtain no evidence at the time, nor afterwards, of vertebral displacement or fracture. There was, also, complete paralysis of the bladder and rectum. No marks of injury were found about the head, and no evidence of injury to the brain other than slight symptoms of concussion, which passed gradually off leaving no sign. He replied to questions when addressed, but immediately after relapsed into a somnolent state. There was no vomiting, the pupils were normal, as was the respiration, skin cold, pulse full and 100. He was placed in a cot, and anodyne doses morphiæ sulphat. prescribed.

On the second day, reaction was in full progress; pulse 134 and full; respiration hurried; tongue slightly furred and temperature normal. The mental torpor was now in great degree gone, and instead, he exhibited a slight obtuseness or indifference to what was passing around him, due probably to the opiates taken. No change in the condition of the paralyzed parts. The urine, drawn off by catheter, seemed to be more copiously secreted than in health, and deposited urates in abundance. It was also slightly albuminous; this, however, was a temporary condition only. He drank quantities of water, but could not be persuaded to eat. There had been no evacuation of the bowels since his fall. It was resolved to defer the application of all retentive apparatus as long as prudence would allow. The anodyne was ordered to be discontinued, and small doses of aromatic spirits of ammonia in a dessertspoonful of sherry wine were given three times a day. This, however, had to be discontinued on the third day, as it became apparent that he could not bear stimulus as yet, however moderate. Potass. bromid. in small doses was administered on the third day, with happy effect, as he at once began to improve in his mental state and his pulse and respiration approached healthful conditions.

On the sixth day all medical treatment was omitted. There had been as yet no action of the bowels, though purgatives and stimulating injections had been employed. This constipation gave us no great concern, however, as he had eaten but very little of the lightest food since his illness. The urine had lost its high colour, but was still excessive in quantity (from four to six pints daily). The catheter was constantly used, and the patient did not feel its introduction into bladder. Here I may mention a simple device which I employed, to save the patient the pain and annoyance of being turned upon his side whenever the catheter was used. About three feet of small rubber tubing was obtained and attached to the ivory ring at the open end of an elastic catheter (No. 12.), the apparatus forming a syphon. The instrument being introduced with the tube hanging over the side of the bed into a vessel, the natural elasticity of the walls of the bladder starts the stream, which is then constant until the viscus is emptied, and no disturbance of the patient's position is necessary. This simple arrangement, the materials of which are always easily obtainable, saved our patient much annoyance, ourselves much trouble, and will prove, I hope, of use to the profession generally.

On the eighth day, our patient was moved from the "sick bay" to the gun deck and placed upon a stationary cot made for him, the canvas and mattress of which were pierced with a considerable aperture in case of involuntary stools. Buck's extension apparatus, with lateral splints to the thigh, was then applied to fractured limb, commencing with ten pounds extension. Patient expressed himself as very comfortable. Bowels still constipated, responding but mechanically to injections and seemingly not affected by cathartics. Pulse 112, soft; appetite poor, tongue still coated with a thick brown fur, and patient sleeping poorly. Some congestion appearing about the buttocks, a lotion of alcohol and water, equal parts, was ordered to be sponged over the parts daily. Bladder still relieved by catheter, and urine somewhat diminished in quantity.

On the eleventh day, our patient was cheerful, taking interest and notice of whatever transpired about him. Bowels still constipated, and condition of paralyzed parts unchanged. Alcohol lotions continued to his back, and the following was ordered: ℞. Strychniæ sulphat., gr. ij; aquæ puræ, f℥viij. Solve. Signa, fʒss, ter die.

12th day. Slept very well last night; otherwise no change. Sol. strychniæ sulph. (each dose, gr. $\frac{1}{64}$), was continued, and one pint of ale allowed daily, with continued application of alcohol and water to back.

13th day. Slight conjunctivitis of right eye, indicative of vital depression. Treatment continued.

14th day. Small bedsore on nates, right side. Pulse 96 and soft. No action of bowels yet. Carbolated oil (acid carbolici, crystal, pars i; Olei olivæ, partes xx. M.), was ordered as a dressing for bedsore, to be applied on lint and renewed twice daily. Other treatment continued. Croton oil, gtt. ij, was administered in pill form, and extension maintained at ten pounds.

15th day. No response from cathartic. Conjunctivitis severe. Commencing œdema of right leg, for which roller bandage was applied. No distension of abdomen or other evidence of fecal accumulation upon external examination. Ordered a collyrium, plumbic acetate, and to have his treatment continued.

16th day. Slight change for the better. Some return of sensation in right leg; voice seems a little stronger. Bowels still constipated. Pulse 100 and soft. Measurement of the fractured limb to-day showed slight shortening ($\frac{1}{2}$ inch). The extension was accordingly increased five pounds. Sponging the back and nates with spirits and water, administration of strychniæ sulph., with ale and special diet continued.

17th day. Sensation continues to improve in lower extremities, and patient is commencing to regain motion in the right leg. When told to raise his thigh from the bed, the quadriceps, sartorius, and adductors are seen to contract, irregularly, but he cannot accomplish the desired motion. Bowels still unrelieved. Bladder irritable, requiring to be frequently emptied, and the urine is somewhat offensive, normal in quantity, and high coloured. Bedsores on both nates. That on right side is as large as the palm of the hand, that on left side, small. Ordered to continue the thorough sponging of the parts around ulcers, the latter to be dressed twice daily with carbolated oil. Other tonic and supporting treatment, with special diet to be continued.

18th day. Losing ground from nearly total want of appetite consequent on extreme constipation of the bowels. Pulse 100, but reduced in volume and strength. Restless and irritable. Tongue coated and conjunctivitis persists. Previous regime continued with special diet. In addition he was ordered, ℞. Ol. crotonis tig., gtt. ij; ol. ricini com. f℥vj. M. Signa, Statim summendus.

19th day. The cathartic administered yesterday operated several times during afternoon and evening. (I have often had occasion to notice the greater *certainty* and *mildness* of action of croton oil when combined with castor oil, producing effects which neither agent could cause alone.) General improvement in symptoms. Extension carefully maintained and treatment continued.

21st day. Progressing fairly. Emaciation great. Appetite improving. Sensation nearly restored in right leg and improving daily in left. Motion also continues to improve slowly. Substituted sherry wine for ale, allowing f℥ij ter die. Cod-liver oil, with other treatment local and general continued.

23d day. Conjunctivitis diminishing slowly. Bedsore on right side covered with large blackish slough. Sensation in some parts of lower extremity now nearly normal. Patient states that the passage of catheter along urethra gives him slight pain now. Substituted fresh beef for chicken broth, and ordered general treatment to be continued.

29th day. Very little change since last report. The slough separated last night from larger bedsore. Both sores are now granulating with profuse discharge, which is very debilitating. The carbolated oil is still applied on lint and a small quantity injected into the cavities of sores every morning. Bowels again torpid. Patient is in excellent spirits. Appetite fair. On measurement, the fractured limb is found to be of equal length with sound leg, and uniting in the most satisfactory manner. From the great emaciation incident to long confinement to bed and exhausting discharges, the provisional callus about fractured bone can easily be felt upon manipulation. Wine, cod-liver oil and sol. strychniæ sulph. continued, with same dressing to bedsores. Extension still maintained without lateral splints to thigh.

32d day. Had an attack of dyspnœa last evening about ten o'clock, which, however, yielded to a small dose of cloric ether. Bowels still torpid. Pulse 85 and of good strength. Ordered the sol. strychniæ sul. to be discontinued, and substituted ferri et quin. citrat., gr. x, ter die. Instead of sherry wine, to have whiskey, f℥ss, ter die, with the cod-liver oil. Special diet continued with dressings to bedsores.

35th day. Improving generally. Bowels were freely moved yesterday, by ol. ricini. General treatment continued.

43d day. Continues to improve slowly. Removed all apparatus from fractured extremity. The thigh had united firmly in a right line, and without the least shortening. General stimulant and nourishing regime still continued. Bedsores closing slowly.

49th day. Bladder regaining tonicity and patient doing well in all respects.

On the 21st of March, the 56th day, our patient convalescing, it was deemed advisable to send him ashore for the change in air and diet. Quarters were accordingly obtained for him at the Seamen's Hospital, Hong Kong. He had now, in some measure, reacquired power over the bladder, and has since quite dispensed with the catheter. The bedsores were still discharging somewhat, but were nearly closed. Sensation and motion were quite normal in the right lower extremity and much restored in the fractured limb, though much of the weakness remaining in his limb was probably due to the long continued extension. His appetite was excellent, bowels quite normal, and spirits good, and he is now on the highway to perfect recovery.

So wonderful an instance of recuperative power is but rarely chronicled. Buck's apparatus seems to be one of the best for naval surgical practice. It is expeditiously applied, occupies very little space, the necessary cords, pulley, and weight are always obtainable on ship-board, it is not in any way disarranged by the motion of a ship at sea, and, lastly, gives as good results as any other method of treatment.

During the first week of patient's illness a fatal result seemed so certain that it was deemed, in consultation, to be worse than useless to apply any apparatus to the fractured limb, as the disturbance would probably hasten the end and could do the patient no present good. On second thought, however, the injustice of omitting any precautionary measure, that might, in the event of our patient's surviving, forever disable him, was given a due consideration, and the result was, that, with the approval of Medical Inspector H. O. Mayo, U.S.N., and Passed Assistant Surgeon Wells, U.S.N., the extension apparatus was applied.

I need scarcely say that the results of treatment in this case, aided as it was by youth and an excellent constitution, have far exceeded our most sanguine hopes. Our patient's recovery from such terrible injuries certainly verifies the maxim, that "while there is life there is hope."

U. S. Flag Ship "Colorado," Hong Kong, China, March 29, 1872.

## Art. X.—*Cancer of the Stomach with Extension of the Disease posteriorly; marked by a peculiar diagnostic feature rarely met with.*

By Robert P. Harris, M.D., of Philadelphia.

The mobility of the abdominal organs, and in many cases the absence of marked symptoms by which we may determine the character and extent of abnormal growths within the peritoneal cavity, render the diagnosis of abdominal tumours exceedingly difficult, and give value to every feature of a truly pathognomonic character. Strange as it may appear, patients have died of cancer of the stomach, where there had been no symptoms during life to lead the medical attendant to suspect that such a disease existed: others have had apparently marked symptoms of the malady where it did not exist; and in others it has been readily recognized by the physician at his first visit as in a far advanced stage, when the attention of the patient had only just been called to his case by abdominal pain, nausea, or vomiting. Fortunately for the profession at the present day, the hand and ear have been brought into such valuable use, that their decisions take precedence of the sensations, so often deceptive, as experienced by the patient, and direct to the discovery of the disease where it has been least suspected. All that is requisite in many cases of doubtful character is, to make a thorough manual and aural examination, to decide by negative or positive evidences what is, in all probability, the seat and nature of the disease in question.

In the case I am about to report, the previous health of the patient had for years been such, that there was much more apparent likelihood of death from pulmonary disease, than any other form of affection. He was 58 years of age at the time of his death, and had been subject to attacks of asthma accompanied with catarrhal symptoms, from the age of 14; and for a long time before his last illness, to chronic bronchitis with abundant expectoration; and occasional asthmatic breathing, particularly at night. He was in comfortable circumstances, and not in any business, was never nervous about his health, and had made up his mind that he would never be perfectly well, so far as his cough and attacks of asthma were concerned. In early life he had been a free-liver and used brandy as a stimulant, until his complexion became very florid, and his weight amounted to about two hundred pounds; but, for some years before his last sickness, he drank nothing, except in one or two attacks of sickness, when I gave him of necessity brandy, with marked improvement to his health. He had several attacks of acute bronchitis before his cough became seated, and one, which occurred more than ten years ago, reduced his flesh and strength to such a degree that he became apprehensive of phthisis and sent for me to examine his lungs. This was one of the occasions that I resorted to the use of stimulants, which, with iron and cod-liver oil, restored him to better health than he had enjoyed for a long time, and brought up his weight to about 165 pounds, which remained his average for several years.

I have been somewhat particular in these details, in preparation for the report of his last illness, as his physical condition should be well understood, that we may properly estimate the reasons for his not perceiving the evidences of his failing health until far advanced in disease.

Mr. S. was absent from home during the summer of 1871, and on his return reported himself as in his usual health, having been free from asthma while in the country, but still having his cough, which he said did not trouble him. In vaccinating his arm I became aware that he had lost flesh, but he said he thought he weighed about as usual, and that he had a famous appetite, which upon close interrogation was very evident. His face was pallid and thin, he had no apparent serious malady of the chest, and did not seem to feel any change in his health. He usually ate three or four eggs for his breakfast, with meat, bread and cakes in proportion; a dinner fit for a strong hale man; and tea of the same character. He made no complaint with regard to his health until November 24th, when he suffered from pains of a neuralgic character in his lower extremities which soon passed off, after which he had asthma, and finally a sense of nausea with dyspeptic symptoms. There were no symptoms of any kind indicative of an affection of the stomach until December 26th, and no vomiting, except for a few days in January, which commenced with an attack of hæmatemesis, and was soon checked. But twenty-five days intervened between the first manifestations of disorder of the digestive organs, and death; and at no time did he vomit solid food, in fact a change from liquid diet to solid food prevented the recurrence of attacks of vomiting which had continued several days previously and did not again return. His first complaint which directed attention to his digestive organs was a want of relish for food; he said, "I can eat enough, but I have no natural feeling of hunger." Nausea after eating was next complained of; then griping pains in the abdomen below the umbilicus; constant eructations of gas; a dragging sensation with increase of abdominal pain in walking, relieved by supporting the abdomen; and finally vomiting.

Palpation and percussion, with auscultation, revealed the presence of a tumour, to the right of and below the usual location of the pyloric orifice of the stomach. This tumour was almost immobile under pressure, and maintained the same relative position whether the patient was examined on his back, sides, or hands and knees, appearing to be attached to the inner face of the spine. It presented the following peculiarities, viz.: When pressed upon steadily, it gave an elastic feel to the fingers over a space of several square inches, attended by a gurgling sensation, followed by a sense of hardness. If the fingers were gradually withdrawn, the gurgling returned with a sense distinctly recognized, as of the passage of fluid and gas through a flattened passage between the hand and tumour. When the ear was applied over the same space, and the hand used in making pressure over the large extremity of the stomach, the passage of fluid and gas could be very distinctly heard at each motion, in compression and relaxation, as if advancing and receding with the hand's action. The sensation to the hand was almost precisely what is experienced in cases of erysipelas, where the areolar tissue of an extremity is infiltrated with fœtid pus, emitting, in its discharge, bubbles of gas.

There could be no question here as to the character of the disease presented, and my opinion was fully confirmed by Dr. S. W. Mitchell who examined the patient with me five days before his death. He was then well enough to sit up, and took a fair allowance of food, but was evidently not nourished by it, and was daily sinking from exhaustion. His pulse rose from 90 to 130 in six days, and although for several days he did not vomit, and had no pain, he rapidly sank and died.

A *post-mortem* examination revealed the cause of the diagnostic feature mentioned, and accounted for several of the peculiarities of the case. There was a cancer seated in the pylorus forming a tumour nearly as large as a fist, but with these unusual characters, viz. : The pyloric orifice was open, and would readily admit the thumb ; the disease mainly affected its posterior semi-circumference, the anterior being soft and but slightly thickened ; the tumour was composed of the thickened posterior semi-circumference of the right extremity of the organ with an extension backwards, attaching it firmly to the spine, and without involving any of the important neighboring viscera, the duodenum itself even being but slightly thickened. The stomach was very large and full of fluid, which with the gas it contained passed in a wave backward and forward to and from the pyloric orifice over the body of the tumour, and beneath the hand and ear in making the examination as before mentioned. The weight of the stomach, being mainly sustained through the tumour, occasioned the pain in walking, which was relieved by supporting the abdomen with the hands. The patulous state of the pyloric orifice accounts for the ability of the patient to bear a diet of solid food without vomiting it, and for the small amount of emesis in the course of the disease. The stomach of the patient was naturally large, and his appetite for many years of a proportionate character ; hence there was little disposition in the organ to contract and expel its contents upwards, as it was comparatively but moderately distended, owing to his diminished appetite.

There were no appearances of cancer in any organ but the stomach ; and, although the patient had in former years been a large consumer of alcoholic drinks, his liver was healthy, and of normal size ; a microscopic examination of the tumour exhibited the usual characteristics of scirrhus.

It is difficult to account for the very rapid exhaustion of Mr. S. after his disease was sufficiently developed to mark its true character, unless it be by supposing that the function of digestion was almost entirely arrested, as he was able to consume an adequate amount of nutriment, until the day prior to his death, to have supported him, if he had been in good health. I have seen patients live with cancer of the stomach until they were emaciated to an extreme degree, could retain no nourishment except for a short time, and were far more advanced in the disease, as shown by the post-mortem appearances ; as in an instance where the stomach was contracted to the capacity of about two fluidounces, had walls an inch thick, and was the centre of a cancerous mass involving every viscus with which the organ came in contact.

## ART. XI.—*Contributions to the Pathological Anatomy of the Nervous System.* By E. C. SEGUIN, M.D., of New York.

I. *Examination of the Cervical Sympathetic Nerve in a Case of Unilateral Sweating of the Head.*—Some attention has of late years been paid to this interesting symptom, and various explanations of its mode of production have been offered.[1] In many cases, mechanical interference (pressure of tumor or aneurism) with the sympathetic nerve is readily made out. In others, the patients' antecedents and the results of treatment warrant the diagnosis of a sympathetic process, one associated with disorder of the stomach or other distant organ. But there are still other cases, in which, the above explanation failing, we are obliged to have recourse to the unmeaning phrase of idiopathic disorder. The instance which I reproduce was of this last kind, and to my knowledge is the only one of its class in which a microscopical examination of the sympathetic chain has been made.

The subject observed by me (a male about 50 years of age) had exhibited one-sided sweating of the face and neck for a considerable number of years; in which period the right half of the face and neck never showed any moisture, not even when the left side was bathed in perspiration. The abnormality, therefore, consisted in the abolition of sweating on one side of the head. When the patient first came under my observation he was in a cachectic state, which ultimately proved to be cancerous, an abdominal tumour soon becoming apparent. On the evening when the patient's wife first informed me of the one-sided sweating, he had been suffering severe abdominal pain, and, in consequence, was perspiring nearly everywhere. The lower and upper limbs and the trunk were moderately moist, the left side of the face (forehead especially) was dripping wet; while immediately beyond the median line the skin of the right side was perfectly dry. The pupils were equal in size and in mobility. A careful estimate of the surface temperature on the temporal region of either side was made by means of Dr. E. Seguin's surface thermometer, but gave no differential result.

On the 7th of May the patient died of exhaustion. The autopsy was made on the 8th, sixteen hours after death, the body having been perfectly preserved in ice. Immense cancerous masses were found in the abdominal cavity, affecting principally the mesenteric glands. Another deposit, in the shape of a rounded tumour as large as a small orange, was met with behind the left clavicle, externally to the sterno-mastoid muscle. Microscopic examination showed the tumour to be composed of carcinomatous tissue.

---

[1] Consult a good paper on the subject by Roberts Bartholow, M.D., in the *Quarterly Journal of Psychological Medicine*, vol. iii. (1869) pp. 134–144.

The sympathetic chain of the neck was carefully removed on both sides, and very shortly afterward immersed in an artificially iodized serum. During the dissection it was observed that the right nerve was unusually adherent to the sheath of the vessels and pneumogastric nerve, from a point on a level with the bifurcation of the carotid artery nearly up to the superior sympathetic ganglion. The post-clavicular tumour did not involve the left nerve in any way. Examination May 9th, twenty hours after the autopsy. To the naked eye the right chain exhibits no middle ganglion, and presents a marked injection of the nerve just above the superior ganglion, in part corresponding to the adhesions already described. The left chain appears absolutely normal (has three ganglia).

Microscopical examination of a considerable number of preparations from the right superior ganglion, teased in serum, or stained with carmine: no granular or amyloid bodies can be detected, nor any abnormality of the connective tissue; the nerve fibres are normal, and the nerve cells alone depart from the healthy standard. This alteration consists in a marked increase of the granular yellow pigment which normally occupies one-sixth to one-fourth of the body of the ganglion cells. In many cells the pigment is more than equal to one-half the cell bulk; in quite a number it takes up nearly the whole cell body, and almost conceals the nucleus. Preparations from that part of the nerve which should have presented a ganglion contain abundant ganglion cells, nearly all with an abnormal amount of pigment. Only a portion of the inferior ganglion remains; but preparations from that show precisely similar appearances. Similarly prepared specimens from various parts of the nerve trunk exhibit perfectly normal nerve fibres, nearly all myelinic, of very variable diameters. No evidence of proliferation of the connective tissue can be seen. The various vessels met with in the above preparations contain large quantities of blood-globules, but their coats are healthy.

Left nerve—Nearly every part of this chain is examined in the same manner; its nerve fibres, bloodvessels (not injected), connective tissue, and ganglion cells appear in precisely the same state as similar elements of the right chain, *i. e.*, the first three are perfectly normal, the last are very granular.

Consequently, the only lesion found in these nerves is symmetrically developed, and can, consequently, bear no relation to the one-sided arrest of sweating observed during life. In another case it would be highly desirable to examine the cervical portion of the spinal cord as well as the sympathetic itself.

The following measurements are obtained from estimating the size of very numerous elements on both sides. Ganglion cells range from .025 mm. to .062 mm. in diameter; nerve fibres from .001 mm. to .02 mm.

II. *Double Central Canal in part of an otherwise normal Spinal Cord.*—While examining sections from various parts of the spinal cord of a patient who had died of the affection known as general paresis of the insane, I came across unmistakable evidences of the existence of two central canals, most distinct in the cervical enlargement.

(*a*) In a section made just below the apex of the fourth ventricle, the central canal is single and open, exhibiting very distinct cells. Its long diameter, antero-posterior, equals .53 mm. ; its short diameter .052 mm.

(*b*) In a section from a point 3 c. below decussation of pyramids, a single central canal, blocked up by distorted epithelial cells, is seen.

(*c*) Section from the upper part of the cervical enlargement shows two small, beautiful central canals, lined with nearly perfect epithelium. The interval between the two canals equals .03 mm. The posterior median fissure comes down to a point opposite the middle of this interval. The lumen of one canal measures transversely .049 mm. ; antero-posteriorly .018 mm. The transverse diameter of the lumen of the other canal measures .07 mm. ; the antero-posterior .012. The epithelial cells have an average length of about .01 mm. The epithelium is entirely preserved around the left canal, but is a little frayed at the inner angle of the right. Between the canals is a shapeless mass of cellular bodies, such as usually lie about the central canal.

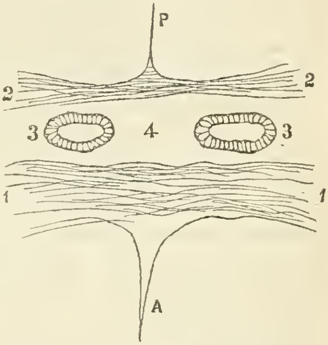


Diagram of Median Part of Transverse Section of Cervical Cord. P. Posterior median fissure. A. Anterior median fissure. 1. Anterior commissure. 2. Posterior commissure. 3. Central canals lined with distinct epithelial cells. 4. Interval filled up with dense cellular structure such as surrounds central canal usually.

(*d*) A section from the lower part of the cervical enlargement shows traces of two canals, but the epithelium is not in as good condition, and a lumen is distinct only on one side. Intervening and surrounding cellular structure not as dense as in (*c*).

(*e*) Section from the mid-dorsal region exhibits a confused mass of cells in the centre of the commissure, with one distinct, irregular aperture, and another very imperfect one at a distance of .08 mm.

(*f*) In the lumbar enlargement nothing is found but one common cellular (not epithelial) central mass without lumen.

(*g*) At a point 3 c. above end of cord no distinct epithelium or canal is visible.

## Art. XII.—*Two Cases of Chloroform Poisoning.* By Samuel C. Busey, M.D., Washington, D. C., Physician in charge of the Diseases of Children at the Columbia Dispensary, and one of the Physicians to the Children's Hospital, &c.

Case I.—On May 28, 1872, I was called to a girl aged 4 years, to whom the mother, through mistake, had given a teaspoonful of chloroform. The child complained of the pungency of the medicine, and of burning in her stomach. On reaching the house, one half hour after, the child was found sitting up, eating a cracker. Her expression was that of a person partially intoxicated; and she staggered in walking, laughed and talked; told me how the medicine burnt her tongue, and hurt her. A teaspoonful of olive oil had been administered, and I gave a draught of warm water. Vomiting soon followed, and the child sank quickly and suddenly into a profound and alarming coma, characterized by excessive pallor of the features, sunken eyes, contracted pupils, insensibility of the cornea, perfect and universal muscular relaxation, complete anæsthesia, coldness of the extremities; an almost imperceptible pulse; short, quick, irregular, and superficial breathing. She was placed in bed, with chest elevated, head thrown back and lower than the body. Artificial heat was applied to the extremities, small quantities of brandy administered from time to time; deglutition was interrupted, slow, and difficult. Respiration was assisted by imitating the natural movements of the chest. Returning consciousness was first manifested by returning sensibility of the cornea, one hour after the setting in of the coma, and in four hours she was entirely restored. Nothing further of interest occurred. No gastric disturbance followed.

The theory of the practice was that the poison must be eliminated, principally through the lungs, and that my duty was to preserve life until sufficient time had elapsed to eliminate the narcotic. With this view I resorted to the arterial stimulant, brandy, to artificial heat, and to mechanical assistance to the respiration.

The sudden setting in of the profound coma, which followed so quickly the administration of the draught of warm water and vomiting occasioned by it, seemed to warrant the inference that the practice was injudicious. Though not quite satisfied whether the fluid poured into the stomach or the act of ejecting it expedited the narcotism, I am inclined to the opinion that warm fluids introduced into the stomach favour the rapid absorption of such volatile substances as chloroform, and hence are contraindicated in such cases.

Subsequent reflection brought me to the conclusion that the application of ice to the spine would prove a valuable adjuvant in the management of such cases. Chapman, in discussing the application and utility of the ice-bag to the spine, says it relieves muscular tension, improves peripheral circulation, and consequently increases surface heat. Hence I was quite prepared to give it a trial in the following case.

Case II.—On the afternoon of July 25, 1872, I was summoned, in great haste, to Miss G. B., aged 30, white, who had walked from the city four miles into the country. The afternoon was excessively hot and sultry. Upon reaching the house of her friend, at 4 o'clock P.M., in an excited and incoherent manner, she represented that she had taken strychnia, with suicidal intent, and had come there to die. Before concluding the story of her purpose she was seized with a violent convulsion, characterized by great muscular rigidity and opisthotonos. She had four in a brief period. During the intervals the pain was intense, located in the abdomen, but not specially in any region. When I reached the house, one and a half hours after the first convulsion, which, perhaps, occurred soon after swallowing the poison, she was perfectly relaxed, excepting the muscles of the jaw; perfectly insensible, pupils contracted to a point, corneæ insensible to the touch, universal anæsthesia; extreme pallor of the face; cold hands and feet, general surface cool; pulse 78, small, very weak; respiration 16, very superficial, every fifth respiration long drawn and full. A faint odour of chloroform could be detected in her breath, a more decided odour in the matter vomited. An emetic of warm water, salt, and mustard had been administered early during the convulsive period, followed by copious draughts of warm water until emesis ensued, which took place a short time previous to my arrival. The relaxation and insensibility were not fully established until after the vomiting. Two bottles were found in her pocket; one a half-ounce vial marked laudanum, and containing ʒij of laudanum; the other an ounce bottle marked poison, labelled as prescriptions usually are, it being a copy of a prescription of a physician in this city, and containing chloroform ʒiij; tinct. camphor. ʒiij; and tinct. opii ʒiss. In this bottle a few drops of the mixture remained, and the odour and taste of chloroform and camphor were distinctly recognized. The conclusion was that she had taken half the contents of the bottle of laudanum—ʒij, and a mixture of chloroform and tincture of camphor, the relative quantities being unknown, but as the written directions on the label were, "one teaspoonful every hour," the inference was that there was a third constituent, employed to dilute the others and to obtund their pungency. I concluded the symptoms were due to chloroform. Failing to open the mouth, I could not administer brandy as I desired. Applied cold to the spine, by the constant movement along the entire column from the neck to the sacrum, of ice wrapped in a soft cloth. After some minutes' application of the ice, perhaps fifteen, I succeeded, by first inserting the handle of a strong spoon between the teeth, in opening the mouth, into which I poured some brandy, but little was swallowed. Ice reapplied, and on the second effort I succeeded in getting, perhaps, half an ounce swallowed. The ice applications were several times repeated, and several potations of brandy were given. A half hour after the first application to the spine very slight sensibility was manifested upon touching the corneæ with the end of the finger, and the pulse increased in volume and strength. Reaction gradually took place, and, in two and a half hours after my arrival, perhaps four hours after having taken the poison, she was sitting up in bed, conversing with the attendants. Subsequently to this she suffered from nausea, and became quite nervous, symptoms which were relieved by a full potation of brandy, and she slept quietly and undisturbed through the night. Ate her breakfast, was up during the day, and on the morning of 27th returned to her home in the city.

Her story was that she purchased strychnia from one druggist and laudanum from another, that she took the contents of one bottle and a portion of the laudanum at one time, just before reaching the house, and that she suffered intense pain in the stomach, a feeling as if on fire, immediately after. The druggist denies that she asked for strychnia, but presented the copied prescription, which he filled, marked it poison, and warned her of the danger of taking more than the prescribed dose. This discrepancy invalidates her testimony, throws a shadow of doubt over all her statements, and casts a suspicion upon the genuineness of the tetanic seizures. If her statements be correct, she took ʒivss of laudanum, ʒiij of chloroform, and ʒiij of tincture of camphor. I did not attribute any of the symptoms to opium, only suspected that she had taken ʒij of laudanum, and feeling quite sure the great portion of this had been ejected from the stomach, I regarded it simply as a case of chloroform poisoning, and so treated it.

The parallel between the symptoms of the two cases was so marked, and the excessive muscular relaxation coming on immediately after the emesis struck me with so much force, that I sought to discover the odour of chloroform, to confirm the opinion already expressed, that she had taken chloroform and not strychnia, notwithstanding the description of the convulsive seizures, by one who had witnessed them, was so forcible and accurate, that, before reaching the house, I was convinced it was a case of strychnia poisoning. The trismus, for a moment, occasioned a doubt, which was only dispelled by the confirmation of my diagnosis, by the distinct recognition of the odour of chloroform by myself and others. I have already intimated a doubt as to the reality of the convulsive seizures, that is, that they were more nearly allied to hysteria than to the action of strychnia.[1] She entered the house under great excitement, talked in an excited manner and incoherently, soon become convulsed and rigid, in the intervals manifesting intense pain. The falsity of her statements in regard to the taking of strychnia, and of her subsequent statement in regard to the purchase of the drug, impress me with the belief that there was no reality in the apparent tetanic seizures; that she had no intention of committing suicide; but that the convulsions, the excited manner, the incoherently told story of her purpose, and the falsity of her statement in regard to the poison purchased and taken, were simply different stages of a pre-arranged scheme to accomplish some sinister purpose, the denouement of which failed through the relaxing and tranquillizing influence of an overdose of chloroform. In this conclusion I am confirmed by some indirect circumstances, not necessary to record, which subsequently came to my knowledge. But the reader will ask, why should there have been trismus? Was I mistaken as to its reality? Several ineffectual efforts to force open the mouth by firm and continuous pressure upon the chin, and to force the handle of a spoon between the teeth, satisfy me that I was not mistaken. The insensibility of the corneæ, tested by frequent application of the end of a finger; the contraction and insensibility of the pupils, neither of which could be feigned; the universal and complete anæsthesia, tested by numerous pricks with a pin; the pallor of the face and coldness of the extremites; the muscular relaxation, and the odour of chloroform in the expired air and fluid vomited, are phenomena which admit of no doubt as to their reality, and when considered altogether, in the light of the preceding case, clearly indicate their nature and cause.

---

[1] The case reported by Dr. Dean (*Med. Times and Gazette*, Dec. 1857, p. 615) and referred to by Stillé, p. 108 of his *Therapeutics and Materia Medica*, presented symptoms nearly analogous to this case. The patient, a lady, "took half an ounce of pure chloroform." The symptoms were as follows: "General convulsions, total insensibility, dilated pupils, trismus, a slightly flushed face, a full and rather oppressed pulse, and foaming at the mouth." In this case the patient was seen within five minutes after taking the chloroform. "The stomach was emptied and brandy administered." Another case, referred to by Stillé, took two ounces, was seen twenty minutes afterwards, exhibited the following symptoms: Stupor, contracted pupils, regular respiration, full and soft pulse, 70 in a minute.

The question naturally suggests itself, would either or both of these patients have died if left to the unaided powers of nature? The child, I think, would; the woman would not have died. Neither the action of the heart nor the respiration was so seriously disturbed as to indicate a fatal termination in the latter case. So far as I know, there has been reported but one death from chloroform narcotism, the details of which the reader can find on page 108, vol. ii., Stillé's *Therapeutics and Materia Medica*, together with a number of cases of chloroform narcotism, which are of interest.

## Art. XIII.—*Vertebrated Prostatic Catheter.* By T. H. Squire, M.D., of Elmira, N. Y.

The results attending the use of the vertebrated catheter, in about twenty difficult cases of prostatic retention, since the publication of my previous article (see No. of this Journal for October, 1871, p. 393 *et seq.*), have not only confirmed the favourable opinion then expressed, in relation to the value of this new instrument, but they have suggested some minor improvements in its mechanism, and taught a few important lessons in regard to its employment.

It cannot be too forcibly impressed upon the minds of those using the catheter, that *constant watchfulness* is required to prevent an accident whereby a portion of the instrument might be left in the bladder.

In the making of the instrument, all of the cups or vertebræ should be alike, excepting the one that is next to the shaft. This one, instead of having its lip thin and somewhat sharp, should have a thick and obtuse margin at its mouth, to prevent injury to the mucous membrane of the urethra, while the catheter is being withdrawn. This cup should also be a little longer than its fellows, to the end that it may be easily distinguished from them.

The vertebrated catheter is contraindicated in cases of retention caused by stricture, or by severe laceration of the urethra, and its superior virtues are limited, mainly, to retention of urine produced by enlargement of the prostate gland.

This catheter, vertebrated from the beak to a point about two inches from the pavilion, would probably be a more suitable instrument than any other, to be worn in the urethra, as a means of permanent dilatation in cases of organic stricture. In such a case, a button-like expansion at the outer extremity, and a delicate silver ring to encircle the penis behind the glans, would be required to secure the instrument in place.

It may not be inappropriate here to state that I first publicly called the attention of the profession to this catheter, in an essay upon Catheterism, read before the Elmira Academy of Medicine, in September, 1870, and at this time I exhibited some experimental instruments which had been made under my direction, for the purpose of testing practically the merits of the new idea.

At the New York State Medical Society, in February, 1871, I exhibited the new instrument, and made known the fundamental principles upon which it was constructed.

## ART. XIV.—*Two Cases of Ovariotomy.* By S. T. KNIGHT, M.D., of Baltimore, Maryland.

THESE following cases are briefly reported, believing that they may be interesting for statistical purposes.

CASE I. *Ovarian Cyst Removed by Enucleation.*—On the 18th March, 1872, Mrs. G. was placed under my care for an ovarian cyst. Her health was greatly impaired; she was suffering greatly; her age was 52. She commenced menstruating at 17, was married at twenty-two, but had never conceived. She received a blow on the left side about sixteen years ago, and from this dates her trouble.

In December last, her left side commenced enlarging, which enlargement rapidly extended, filling up the whole abdomen. She had never been tapped. I advised ovariotomy, and gave her a candid opinion of the chances of success attending it, which advice she concluded to follow. On Thursday, April 4th, at 12 o'clock, present Drs. McSherry, Chisolm, Kloman, and Louis W. Knight, I proceeded. As she was quite feeble, a good draught of whiskey and water was given her before she was taken from her bed. She was then placed upon a table, made comfortable with pillows, and Dr. McSherry soon brought her under the influence of chloroform. I then made an incision three inches in length through the linea alba, midway between the umbilicus and symphysis pubis, down to the peritoneum; and upon dividing the parietal layer, a gush of serum escaped. The cyst being then in view, a large, well defined band was discovered, spread over the presenting surface of the cyst; this was first taken for intestine, but by use of some force with the finger, followed up by the heavy curved sound, this band was to a great extent detached from the tumour. Its adhesions, which were very broad and extensive, covered the entire left side of the sac, in a belt several inches wide. As this detachment was made prior to the puncture of the sac, the distension of the cyst acted by direct pressure, and prevented any bleeding. The sac was now punctured, and as it collapsed was drawn out of the opening, and the broad adherent band was still further detached from the left side. At this juncture the large intestine (sigmoid flexure of the colon) came in sight, adhering to this broad ligamentous surface; and, as it was firmly attached to the band, which was being separated from the tumour, it was not disturbed in its relations.

Some large cords, resembling vessels, were now observed running between this broad band and the surface of the cyst, and as they had become loosened during the finger dissection, they were easily torn across.

The sac was now subjected to gentle but steady traction, when finally, much to our surprise, it came away without further attachment (a sac without a pedicle).

Up to the present point of isolation, the patient had not lost three ounces of blood.

As the broad and formerly adherent band was now recognized as the left Fallopian tube, with its broad ligament very ragged with vessels where it had been torn away from the ovarian sac, leaving a broad oozing surface, and being apprehensive that when full reaction came on, free capillary hemorrhage would ensue, I deemed it the safer course to fold this band together and convert it into (what it really was) the pedicle of the tumour, draw it out as far as could be done without undue traction, and clamp it.

The loose end was cut off, and this pedicle, two and a half inches wide, was secured through the wound, which it very nearly filled, and leaving only room enough to pass one suture on either side of it. Everything progressed favourably after the operation, and rapid convalescence was established.

This case is interesting, inasmuch as the pedicle, a very broad one, including as usual the Fallopian tube, adhered to the entire left side and anterior surface of the tumour; covering an area of nearly one square foot of surface.

As this unusual condition had not been recognized in the outset, the very first step taken to separate the supposed adhesion, led to the isolation of the pedicle by tearing it away from the walls of the sac, or, in other words, splitting the walls proper, or getting in between the coats of the tumour.

CASE II. *Ovariotomy Performed During Menstruation.*—V. L., unmarried, age 25; always enjoyed good health, with the exception of pain during her menstrual flow, came under my care November 11th, 1870. She had observed her abdomen to enlarge during a period of three years, but the increase had been slow.

I advised ovariotomy, but could not at that time gain her consent. I therefore tapped her on the 27th, when twenty-three pints of clear fluid were drawn off. Her abdomen rapidly filled again, and on the 24th of August, 1871, ovariotomy was performed.

When about to commence the operation, the patient informed me that her menstrual flow had come on the night previous, and was quite free. Upon consultation, I concluded to proceed. A small abdominal incision was made; the cyst was withdrawn without difficulty. A few parietal and omental adhesions existed, but these were readily broken up, and the pedicle clamped. Recovery went on rapidly, and in five weeks the patient was able to walk about her room. On the return of the first, second, and third menstrual periods, the patient informed me that she had quite an oozing of blood from the cicatrix, but since that time she has not been annoyed in that way, and is now in the enjoyment of good health.

## Art. XV.—*Case of Ovariotomy.* By E. A. Lee, M.D., of Duquoin, Illinois.

June 13, 1871, I was requested to see Miss C., aged thirty; rather above medium stature; considerably emaciated; pretty strongly marked nervous temperament. Has not menstruated since an attack of fever one year since; abdomen as large, or larger than most women at full term of pregnancy; most prominent on left side, about two and one-half inches outward and downward from the umbilicus, and at this point measuring thirty-six inches in circumference.

At several points there was decided fluctuation, while, between them, there appears to be a solid or semi-solid mass. The enlargement extended so near to the zyphoid cartilage as to render it difficult to pass the hand between it and the upper part of the tumour; abdominal walls movable over the mass of the tumour. The enlargement was first observed during the attack of fever above referred to, when it was about the size of an orange, occupying the upper part of the left iliac region, was circumscribed, and movable, increasing very little in size until December, since which time it has continued to enlarge, and for the last few months very rapidly. A careful examination warranted the diagnosis of multilocular ovarian cyst, and, from the rapidity of its growth and large size, there appears to be little hope for relief, except from a resort to extirpation.

*29th.* The bowels having been moved, the urine drawn off, and the necessity of an operation concurred in by all present, the patient was brought fully under the influence of chloroform, when, with the assistance of the following medical gentlemen, my partner, Dr. I. M. Neely, Drs. Hughey, Price, and Sams, of Tamaroa, I made an incision three inches long in the line of the linea alba. On reaching the peritoneum, a quart or more of viscid, slightly opaque serum escaped, which exposed the smooth, pinkish-coloured tumour. No adhesions of great magnitude being discovered, a trocar was plunged into the presenting cyst, and three pints of fluid drawn off. Two other cysts were subsequently evacuated. The incision was then increased to eight inches, and three other cysts evacuated with the trocar. Raising the tumour on the left side, pretty extensive bands of adhesion were observed, which, being divided with the écraseur, so released the mass as to permit its being lifted up, revealing a broad membranous pedicle, and an extensive, but not thick, parietal attachment, both containing vessels of considerable size. Securing these with ligatures, the severance of a tumour, which, with its contents, weighed twenty-four pounds, was now complete. Care was taken during the entire operation to prevent the contents of the cysts and blood from flowing into the abdominal cavity, hence very little sponging was necessary to cleanse the parts. The pedicle was returned, and ligatures brought out at the lower angle of the incision. The external wound was closed with three large and four small silver pins, covered with a compress, and this retained in place with a flannel binder.

The patient passed through the operation without an untoward symptom, and with very little shock—pulse seldom reaching one hundred. Morphia sulphas gr. ss was given before the operation, and continued, so as to procure immunity from pain and secure sleep.

*July* 1. Patient has done well; wound appears to have healed almost entirely by first intention. Complains to-day of severe abdominal pain; pulse one hundred and thirty-six; enlargement half as great as before operation; abdomen quite tender on pressure. Passed a small catheter beside the ligature, through which flowed an ounce or more of very fetid, bloody pus. Danger of peritonitis appearing imminent, a solution of acid carbolici, in the proportion of ℥ss to aqua Oj was injected into the abdominal cavity; it very considerably facilitated the discharge of disorganized blood and pus, and afforded great and instant relief.

2*d*. Discharge from wound about four ounces, still very fetid; symptoms of peritoneal inflammation subsiding. Injections into wound ordered morning and evening, patient always expressing herself relieved from use of them. Distension of bowels complained of, notwithstanding thorough evacuation by injection. Passed a rectal tube into the rectum, which, permitting the gas to escape, gave immediate relief. The tube was retained almost continually, as its removal was soon followed by reaccumulation of the gas. Up to this time iced milk constituted the only article of diet.

From this time until July 29th there was very little modification of the treatment. The wound was literally washed out by injections twice daily. Discharge gradually diminishing. One of the ligatures came away to-day. Injections ordered once daily, until August 17th, when the other ligature was removed. The healing process from this time was very rapid, resulting in the complete closure of the opening left by ligature.

At date of writing there is a complete restoration to health, and an increase of weight amounting to forty pounds or more. Menstrual function regular in occurrence, and the flow normal in quantity.

---

## Art. XVI.—*On the Action of Quinia on the Uterus.* By O. H. Seeds, M.D., of Columbia, Texas.

For upwards of twelve years I have had an extensive practice in Columbia, Texas, and in the surrounding country, a region interspersed with bayous, ponds, and lagoons, possessing an extremely rich alluvial soil, luxurious vegetation, and all the conditions favourable for the production of malaria, and where the prevailing diseases are, consequently, the result of malarial poisoning. I have very closely observed the action of quinia on the uterus, and feel convinced that in dysmenorrhœa, amenorrhœa, and other diseases of the uterus resulting from a malarial cachexia such as occur in this region, the only effect observed from that medicine is that of a stimulant to the organ, tending to restore its healthy functions. I have not seen a case of abortion that could be ascribed to the action of that remedy.

I could relate many cases to show the safety with which quinia can be given to pregnant women, but shall quote only the following one :—

I was called to an intelligent mulatto girl who appeared to be in a dying condition, as I supposed at first, from the effect of some poison, but a woman present stated that the patient had taken an overdose of quinia. Under appropriate treatment she sufficiently recovered in about twenty-four hours to converse, when she confessed that she was four and a half months advanced in pregnancy, and had taken seventy or eighty grains of quinia to bring on her "sickness," saying that a dose of that article always did so when her menstruation was checked from any other cause. Between four and five months afterwards she was delivered of a fine healthy child.

In conclusion, let me say that in my practice I have given quinia irrespective of pregnancy, whenever the case seemed to me to require it, without any bad result, and I am satisfied that I have prevented abortion, and saved the lives of many mothers and children, by such treatment.

## ART. XVII.—*Oxytocic Action of Quinia.* By R. H. RUTLAND, M.D., of Las Animas, Colorado.

FOR eighteen years I have prescribed quinia in large doses, regardless of the pregnant condition of the patient, and have never seen any unfavourable result. Indeed, in treating a patient suffering from malarial fever and threatened abortion, I should esteem quinia the surest remedy for averting it; not because it possesses any special power to procure uterine quietude, but because it would break up the morbid excitement upon which the uterine activity most probably depended. That quinia has no special oxytocic properties in cases in which it is indicated, I am as well satisfied as of any therapeutic fact.

# REVIEWS.

Art. XVIII.—*A System of Surgery; Pathological, Diagnostic, Therapeutic, and Operative.* By Samuel D. Gross, M.D., LL.D., D.C.L. Oxon., Professor of Surgery in the Jefferson Medical College of Philadelphia, etc. Illustrated by upwards of fourteen hundred engravings. 5th edition, greatly enlarged and thoroughly revised. 2 vols. Imp. 8vo. pp. 2268. H. C. Lea: Philadelphia, 1872.

Though it is only thirteen years since the masterly work of Prof. Gross first appeared, yet four editions have been exhausted, and a fifth is now before us, upon which, it is stated, "upwards of five years of arduous labour have been expended. Every chapter has been thoroughly revised; the text has been augmented by an amount of matter fully equal to four hundred and fifty pages. . . . Many portions have been entirely rewritten, and every effort has been made to condense the language; while an enlargement in the form of the work has prevented any considerable increase in the number of pages."

Of the character and value of Gross' Surgery, nothing need now be said. By common consent it is the most thorough practical treatise in the English language on surgery in general, and the best book of reference for the general practitioner.

This present edition has the same fault (as we believe it to be) that has always characterized the work, viz., that it aims at too much, and is too extensive, both in range of subject and details of each, to ever be really *the* book for undergraduates; on the other hand, it is too limited in the discussion of many topics to be a surgical encyclopædia for well-established practitioners. Yet, notwithstanding all this, no one ever before succeeded so well as Prof. Gross has done, in the attempt to write at once a college text-book and a system of surgery.

We do not propose to review *in extenso* the edition before us, but, with reference to a few subjects only, to see how far, in the rewriting and enlarging, the author has incorporated the results of more than a dozen years' labour of surgeons and pathologists the world over. As in the earlier editions, "Inflammation; its terminations and results" receives a large share of attention. But "inflammation" cannot to-day be written of as it was ten years ago. What says our author respecting its intimate nature? To the "essential elements of the inflammatory process," there has been added, "exudation of blood-liquor, and emigration of white-blood corpuscles." In the 4th edition we find that, "The colourless or pale corpuscles have only been recently discovered, their number is very limited, except in certain forms of disease, where it is much increased. . . . What the precise office of the white corpuscles is has not been determined, but it seems probable that it is connected in some way with the process of nutrition."

In the present edition it is written, that "The colourless, or white corpuscles—the leucocytes of certain authors—are much less numerous, but greatly multiply in inflammation; they are round, much larger than the red, and finely granulated on the surface, thus giving them a rough appearance. What their precise office is has not been determined, but it is certain that, at their expense, the red corpuscles can be regenerated; that they wander from the vessels into the surrounding tissues, where they increase by multiplication; and that they play an important part in effecting certain plastic changes, if, indeed, they are not concerned in the regeneration of all the tissues of the body."

Respecting the part played by the nerves in inflammation, the present edition states that it

> "is very imperfectly understood. It is evident, however, that it is very important, although it is impossible to define its character, or specify its degree. In traumatic inflammation, as well as in many cases of idiopathic, the vascular changes, which, as has been seen, consist essentially in dilatation of the vessels, with consequent diminution, retardation, and stasis of the circulation, cannot be referred to the blood itself, but must be seated in the vascular walls. Decrease of the resistance of the vessels to the pressure of the blood is probably due to perverted innervation, The irritated sensory or nutrient nerves of the inflamed part impress the vaso-motor centre in such a way that its action on the walls of the vessels through the vaso-motor nerves is diminished or inhibited, thereby producing lessened tone, or reflex paralysis of their muscular fibres, as evinced by dilatation of the vessels, and consequent congestion of the tissues, to which the irritated sensory nerves are distributed."

The corresponding statement in the earlier edition is, that

> "The part played by the nerves is very imperfectly understood. It is evident, however, that it is very important, although we are unable to define its character, or specify its degree. In traumatic inflammation, as well as in many cases of the idiopathic form of the malady, the primary impression is probably nearly always made upon the nerves, from which it is immediately reflected upon the capillary vessels. . . . The nerves apprise the brain or the cerebro-spinal axis of the attack, and the consequence is, that the heart, acting with unusual vigour, throws an undue quantity of blood into the suffering structures."

Instead of the ten-line reference to the tissue-changes at the seat of inflammation, found in the 4th edition, we now have two pages devoted to the consideration of the migration of white-corpuscles and the "nutritive disturbances of the cellular elements of the tissues," it being declared that

> "The process of inflammation is attended with local disturbances of circulation and nutrition, the latter being dependent upon the former, which manifest themselves, first, by the escape through the walls of the thinned and dilated veins and capillaries of more blood-liquor than is essential to normal nutritive changes; and, secondly, under the influence of the assimilation of an excess of new material derived from that fluid, by increased activity of the cellular elements of the part, whether they be natural to it, or intruders from the blood-vessels, as shown by their enormous multiplication.
>
> "The accumulation of young cells in the tissues thus gives rise to inflammatory new formations, or plastic infiltration, which cannot be said, on the one hand, to be due exclusively to the emigration and migration of white-blood corpuscles, as advocated by Cohnheim and his followers, or to be derived, on the other hand, exclusively from the connective-tissue corpuscles, as taught by Virchow and his school. On the contrary, both elements participate in the process, as do the epithelia, gland-cells, muscle-corpuscles, nerve-cells, and, in point of fact, all cells found in the tissues or organ affected."

The outline of Virchow's views, as set forth in the "Cellular Pathology," which heretofore concluded this sub-chapter, has given place to the following:—

> "Attempts have been made from time to time to invent theories of inflammation, that should satisfactorily explain its character, the philosophers who have thus occupied themselves imagining that, with the aid of the microscope and other ingenious appliances, they could penetrate the very secrets of nature, by tracing out her most intricate and hidden operations, and the laws by which these operations are governed. How futile all such attempts have been, and are likely to be, the history of the subject amply attests. Theory has succeeded theory, only to be ridiculed, and to work out, so to speak, its own fallacy and insufficiency. The cautious observer contents himself with things as he discerns them, unbiassed by prejudice and conjecture, satisfied if he can occasionally pick up a pebble at the bottom of the great sea of knowledge. Viewed in this light, and measured by this rule, the theories of one man are of no more importance than those of another; as guides to clinical observation, and as aids to practice, they are utterly valueless. It is fortunate for us, in this matter-of-fact age, that we are not obliged, as was the case in former times, in order to establish our claims as philosophers, to speculate about the final causes of things."

Our author is evidently tired of accepting theories that must needs be discarded as soon as adopted.

The treatment of inflammation remains essentially as before, Prof. Gross still holding his well-known views of the value of bloodletting, mercury, and the antiphlogistic treatment generally. But he has in the present edition added the following sentence:—

> "In speaking, as I shall have frequent occasion to do in the following pages, of the 'antiphlogistic' treatment, I shall employ this expression, sanctioned by long usage, altogether in a conventional sense, and not in that of the older pathologists. An antiphlogistic remedy may, in the modern acceptation of the term, and in the sense in which I shall use it, be mild or harsh, gentle or heroic, soothing or perturbating, according to the exigencies of each particular case of inflammation, injury, or disease. To treat all patients similarly, or on one uniform plan, would be contrary alike to the dictates of common sense, the requirements of science, and the experience of the profession."

In the sub-chapter on "Suppuration," there are to be noticed a number of changes. As indicative of the author's readiness to correct wrong opinions previously entertained, we find that he has omitted the following sentence: "No surgeon likes to tie a large vein, well knowing that the operation may be followed by fatal suppuration of its lining membrane" (4th ed. vol. i. p. 126), and has stated elsewhere (5th ed. vol. i. p. 824) that "in only one instance [referring to Dr. S. W. Gross' statistics of vein ligations], was there any evidence of pyæmia; in none of diffused phlebitis . . . It will thus be seen that the danger of ligating veins is in great degree if not entirely unfounded."

The most important changes, though, are, as might be expected, with reference to the nature and origin of pus, which, instead of being merely altered fibrin (4th ed. vol i. p. 129), he now states

> "is due to the disturbances of circulation and nutrition of the affected structures, through which the activity of local protoplasmic masses is increased, as evinced by their enormous multiplication. It has been demonstrated by Virchow that, under the influence of the assimilation of an excess of blood-liquor which has escaped from the dilated vessels at the focus of the inflammation, the connective-tissue corpuscles proliferate and assume the characters of pus globules. This theory of the formation of pus, however, is too exclusive, and

has been placed in doubt by the discovery of Cohnheim, who has shown by a series of well-contrived experiments that pus is in a great degree the product of the colourless blood corpuscles which have wandered out of the vessels into the tissues. The results of these experiments have been confirmed by the researches of Koster, Vulpian, and other observers, and they carry the mind back to the days of Gendrin, who, in 1824, in his great work on the Anatomical History of Inflammation, enunciated almost precisely similar views, based upon his own investigations. It has, moreover, been demonstrated that other cell elements enter into the formation of pus, as, for example, those of the cornea, muscles, glands, mucous and serous membranes, which by their germination aid in the process. These points . . . clearly point to the fact that pus is fluid inflammatory new formation, due to the accumulation of young cells, which are derived partly from the blood, and partly from the cell elements normal to the tissue or organ affected."

Again, instead of the declaration that "pus is never absorbed" (4th ed. vol. i. p. 130), it is now said, that,

"in regard to the absorption of pus, it is highly probable that the more fluid elements enter the system readily, and without any previous change; and, indeed, recent observation has shown that even the pus corpuscles may do this, although it is reasonable to suppose that, as a general rule, the absorbent vessels will not admit them unless they have been more or less disintegrated and broken down."

The chapter on "Tumours" has been to a very large extent rewritten. The classification has been changed so as to more nearly correspond to that based upon anatomical character now generally adopted, and an entire new section on "Sarcoma" has been introduced in place of the remarks in the previous editions on the "fibro-plastic," "recurrent fibroid," and "myeloid" tumours. It would, perhaps, have been better if the chapter had been altogether rewritten, for in that case we should probably not have found, as we now do, that certain varieties of tumours are described under more than one head; *e. g.*, gelatinous polyps under myxomatous and polypoid tumours, fibrous polyps under fibrous and polypoid tumours, fibrous tumours of the uterus under fibrous and myxomatous tumours. The new section on "Sarcoma" is a decided addition to the chapter. In what tumours of this class differ from "carcinomas" is thus expressed :—

"After extirpation they almost certainly return, retaining the peculiarities of the original tumour, in or near the cicatrice, and this local recurrence is constantly repeated. In the latter [carcinomas], on the other hand, continuous recurrence is the rule, and they usually assume the encephaloid type. Sarcomas evince little disposition to open; they rarely give rise to a true cachexia; are almost painless before ulceration sets in; and the neighbouring lymphatic glands are singularly free from implication. These distinctive features are reversed in carcinoma. To the naked eye, the only differential characteristics, so far as we are aware, are that the former are frequently encapsulated, fat is never seen in their interior, and they do not contain a juice like that of carcinoma, which can be expressed from an alveolar structure. The anatomical distinctions are not less marked, the relation borne by the cell to the intercellular substance being decisive of the nature of the mass. In carcinoma, alveoli are formed between the trabeculæ of a fibrous stroma, which are crowded by cells of an epithelial type. In sarcomas, on the other hand, the cells are arranged as parenchymatous cells, forming component parts of a continuous tissue; and the structure is never, in the true sense of the term, alveolar, in such a way that the cell elements, which always preserve the type of connective-tissue cells, are grouped in the particular meshes of a stroma."

As a summing up, our author says :—

"In a word, a very rapidly growing, large, painless, apparently fluctuating tumour, occurring before the fortieth year, not marked by lymphatic involvement, disposition to ulcerate, or impairment of the general health, may be pronounced to be sarcomatous. In the treatment of these tumours nothing need to be expected from general measures, the only remedy that holds out the slightest prospect for a cure being early and complete excision, with, perhaps, destructive cauterization of the surrounding parts. For the very large soft sarcomas which originate deep in the extremities, whether from the interstitial muscular tissue, lymphatic glands, aponeuroses, sheaths of vessels and nerves, periosteum or bone, amputation, if possible, in the contiguity of the limb, is the proper resource, while resection may be practised when the shorter bones, such as the phalanges of the fingers, clavicle, radius, and ulna, are affected. When the jaws are the seat of the disease, total extirpation is preferable to partial excision."

As respects the contraindications to surgical interference in cases of carcinoma, we find the following one in addition to what were presented in the earlier editions :—

"I was formerly greatly opposed, in carcinomatous affections, to operative interference merely as a palliative measure, believing that the pain and risk consequent upon its employment, would not (?) counterbalance the beneficial effects. After more mature experience, however, I came to a different conclusion, and for years past I have, in numerous instances, used the knife where there was not the slightest prospect of a permanent cure. The class of cases to which this procedure is more especially adapted are those in which there are excessive pain, loss of appetite and sleep, and great discharge of foul, offensive matter, contaminating the air of the patient's apartment, and rapidly undermining the vital powers. With the aid of chloroform, an operation is no longer a source of suffering, and may, in such a condition, if properly performed, be followed by much good, not only freeing the patient from local and constitutional distress, but perhaps materially prolonging life by getting rid of a burden which has weighed down both mind and body. Moreover the recurring disease is not always as bad as the original, although such an event can seldom be foretold with any degree of certainty."

The chapter on "Syphilis" remains much as heretofore, and will, we think, be found to be one of the least, if not *the* least, satisfactory in the book. Professor Gross is, as he always has been, an out-and-out unicist, and many of his views are not at all in accordance with those of the great majority of syphilographers of the present day. The soft chancre, he says,

"often affects the system, giving rise to secondary and tertiary symptoms; attacks of this kind, however, are much less common than in the indurated variety, though the effects are frequently not less deplorable. . . . The non-indurated chancre, if multiple or of great extent, will, other things being equal, be more likely to give rise to constitutional involvement than a single sore, especially if superficial and of small size. . . . It is well known, that, in some individuals, soft chancres produce hard chancres, and hard chancres soft, although, as a general rule, like creates like. Another fact of no little interest as it regards the unicity of the syphilitic virus is, that both hard and soft chancres not unfrequently follow inoculation with the matter of mucous tubercles."

Now this is all true or all not so, and if true, and our author is right, the major part of the teachings of the present time is incorrect, and the teachers radically in error. Again, as respects the bubo; the multiple, indolent, indurated glandular enlargements are, it is said, "to be dreaded on account of the disposition of the specific poison to lurk in the substance of the affected glands, from which, in time, there is great danger of its being conveyed into the system, so as to give rise ultimately to secondary and tertiary symptoms. The bubo, in fact, is a hot-bed; not only for the temporary lodgement of virus, but for its zymotic operation, and its gradual extension to other and more important structures." How many syphilographers to-day will assent to these statements, and see, in specifically indurated lymphatic chains, "hot-beds for the zymotic operation" of deposited syphilitic virus? Such characteristic adenopathy is accepted generally as an indication of and consequence of a constitutional infection. It seems to us, as we have elsewhere stated, that there are certain facts that will not square with any theory as yet presented, and, as Fournier has said, "the absolute diagnosis of chancre cannot and should not be established except on these two bases; the chancre on the one hand; and, on the other, the ulterior evolution, that is to say, the constitutional affections which after a short interval succeed the chancre;" yet, for all this, we cannot but believe that the highest American authority on surgery is teaching a doctrine that will confuse practitioners and injure patients. The practitioner will be confused by the diametrically opposed statements of his recognized authorities; and patients will be injured by the mental disturbance that must come from the believed liability to constitutional manifestations, and perhaps, too, by the treatment instituted, if a mercurial course is to be adopted when the ulcer is "followed by a *suppurating* bubo."

We are glad to see that, as in previous editions, recognition is made of the possible communication of syphilis in vaccination. and that this possibility is dwelt upon more strongly than before. From almost every civilized country, proof has been received that vaccination *is* a means by which syphilis can be communicated, and this fact should be the more persistently brought to the notice of the profession because of the disposition that has been of late years manifested in certain quarters to ignore or deny the possibility of such transmission.

Chapter XI. on "Railway Injuries," is a new chapter, and upon a subject the importance of which is yearly being more recognized, especially with reference to the remote effects. These latter

> "manifest themselves in various degrees as well as in various forms; sometimes in one manner, and sometimes in another, from the slightest departure from the normal condition of an organ to the complete perversion of its functions. The exciting cause is more commonly a slight than a severe one, the patient, after having suffered from shock, having, perhaps, made a rapid recovery, or so nearly regained his mental and physical vigour as to be able in a short time to resume his accustomed occupation as if nothing had happened. By and by, however, generally after the lapse of several months, without any assignable cause, his general health gives way, or he gradually loses his control over some particular organ. The approaches denotive of these occurrences are usually very stealthy and insidious, and hence, long before the patient is made fully sensible of their import, the most serious pathological changes may take place at the seat of the original lesion."

"A mild course of mercury" is declared to be indicated when these secondary effects ensue, and "slight ptyalism steadily maintained for several consecutive weeks is sometimes required." Will we never have a settlement of this vexed question of the therapeutic place and value of mercury?

There is possibly yet another class of "railway injuries," not referred to in the chapter before us, viz., nervous lesions from the long-continued jarring to which train-employés and steady travellers are subjected.

In Chapter XIII. a section on "Thermometry" has been introduced, but reference is only made to the use of the thermometer in cases of *exaltation* of temperature. As M. Redard has shown, the accurate determination of *decrease* of bodily heat is of great assistance in the establishment of diagnosis and prognosis in cases of severe wounds and injuries, such as gunshot fractures, burns, and penetrating wounds of the cavities, particularly the abdominal. In section 7, on the "Microscope," the previously given description of the instrument is omitted.

In Chapter XIV. sections on "hypodermic medication," the "surgical applications of electricity," and "antiseptics," have been added. Passing over the remarks on faradization and galvanic cauterization, we find that, according to our author,

> "The best results from electrolysis have been obtained in vascular, sebaceous, and goitrous tumours, particularly the cystic variety; in chronic glandular tumour; in hydatid tumours of the liver; in hydrocele, and in stricture of the urethra. In the treatment of aneurism it has almost been abandoned; but it has proved successful in two cases of the cirsoid form of the disease that have been subjected to it. Nævoid, venous, and small sebaceous tumours rarely resist the influence of the galvanic current, while the testimony of Dr. Althaus and Dr. Mackenzie is strongly in favour of it in the management of goitre. . . . Electrolysis has also been employed in carcinomatous tumours, but a more extended experience is necessary to decide its applicability to these affections."

Of *antiseptics* and the *antiseptic dressing* no very exalted opinion seems to be held.

> "Although the researches of Pasteur and other observers have established the existence of myriads of low forms of organisms, especially fungoid spores, in our breathing atmosphere, the demonstration of living disease-producing germs is wanting. Hence physicians, myself included, have been somewhat chary in accepting the germ theory of the decomposition of animal matter. . . . My experience, moreover, in private practice, has convinced me that abscesses may be opened, that wounds, as those made in the removal of tumours, may close, and that compound fractures may unite, as readily without as under the use of antiseptic agents. . . . When the wound is very large, as after the amputation of a limb, or the extirpation of the mammary gland, . . . I have never found any appreciable benefit from the use of carbolic acid. . . . Whether carbolic acid, apart from the other means recommended by Prof. Lister, is really of any benefit in the treatment of these injuries, is still a mooted question. . . . The advantage of the animal ligature is that, besides approaching more nearly to the living tissues than any other material, the ends may be cut off close to the knot; its disadvantage, that it soon becomes softened and disintegrated from the imbibition of fluids, thereby rendering it liable to separate before it has accomplished the object for which it was applied. This reason ought to be quite sufficient to induce its rejection; for no conscientious surgeon should ever subject his patient to such a contingency, especially when he has always at hand so reliable a substance as silk. This objection is sustained by the recent reports of two cases in which the carbolic catgut ligature slipped off the carotid and femoral arteries."

We hardly think our author has done full justice to the germ theory and the antiseptic dressing. Is it so certain that "demonstration of living disease-producing germs is wanting?" May they not be right who, like MM. Coze and Feltz, contend that "every infectious element is in its nature bacteriform," and further that the bacteria that they show are the living germs producing the disease under which the individuals from whom they were taken were labouring at the time? Again, that wounds will unite as readily without as under the use of antiseptic agents, many of the best surgeons in the world do not believe; insisting, as they do, that thorough and faithful antiseptic dressing will produce most satisfactory results in a percentage of cases much higher than that afforded by any other method. Again, the properly prepared carbolized catgut ligature is not liable to the objection raised against it; but, in the words of Mr. Lister, "a knot tied upon it holds more securely than one on waxed silk. Water, whether cold or at a temperature of 100° F., has little effect upon the thread, and even putrid serum of the blood acting upon it for days at the temperature of the body, does not make the knots relax their hold." It is declared by those who ought to be familiar with the facts, that the failure in Mr. Spence's case was due directly to the use of an improperly prepared ligature.

In the chapter on "Anæsthetics," we find the historical notice almost as in the first edition, and much more full than in the fourth; and Dr. Horace Wells' name and labours are again duly recognized. Why they were not so in the fourth, as in the earlier editions, we cannot understand. As respects the use of chloroform it is said: "It is to be regretted, that an agent capable of conferring such vast benefit should be so little employed in this country, because a fatal instance, produced for the most part by maladministration, is occasionally reported, as if death in surgical operations never arose from any other cause." It is true, however, that many surgeons are growing more and more afraid of it, for either the mortality resulting from its use is frightfully increasing, or else the fatal results are being more honestly acknowledged. In the present edition we find notice of the properties, effects, and methods of using the bichloride of methylene and nitrous oxide, neither of which were treated of in the preceding edition.

The chapters on "Diseases and Injuries of Arteries, Veins, and Capillaries," particularly the first, have been considerably enlarged, and a few changes made that deserve notice. Acupressure and torsion are more fully described, and more favourably spoken of than before; mention is made of various substitutes for the ligature and acupressure; considerable space is devoted to the points at which compression of the various arteries should be made; forced flexion is treated of. To the causes of secondary hemorrhage, previously given, has been added "organic lesion of liver, heart, and other viscera." Direct compression of the denuded artery is mentioned at some length, the author declaring that he is favourably impressed with it; acupuncture is pronounced unworthy of repetition; the operation of opening the sac has been too seldom performed for the author to express a "final verdict in regard to its value." Varicose aneurisms of various trunks are mentioned, as also aneurism of the "deep femoral." A section has been added on ligation of the "common femoral." Decided preference is expressed for Guthrie's "direct method" of arriving at the "posterior tibial." The statistical tables have been much enlarged, and full use made of the more recent compilations. As respects the propriety of ligating veins, we have already noticed the change of opinion which has taken place since the fourth edition was published.

Upon the subject of the retentive dressing in cases of fracture, we find that the previously expressed preference for the starch bandage is no longer held, but

> "Of all the articles used in the preparation of the immovable apparatus, I give a decided preference to the silicate of soda, as it not only possesses every quality requisite for such a contrivance, but the great additional advantage of rapid desiccation and facility of application and removal. The plaster of Paris dressing is chiefly applicable to fractures of the lower extremity, where it answers

a most excellent purpose; while the paraffin bandage, from its impermeability to fluids, is peculiarly adapted to injuries of this kind attended with discharge. The starch bandage is always troublesome, dries slowly, even with the aid of artificial heat, and unless the greatest possible care be taken, is liable to premature derangement, necessitating occasional renewal, at a time, perhaps, when interference might be prejudicial to the reparative process. The glue dressing has not been extensively enough employed to enable us to form a correct estimate of its value."

The chapter on "Diseases of the Joints" remains nearly as before; an additional section on Concussion of the Joints has been added.

Dislocations of the hip have, since the first edition appeared, been the subject of much study and investigation, and the literature of the profession has been increased by, among other contributions, the elegant monograph of Prof. Bigelow. His views with reference to the influence of the ilio-femoral ligament are duly noticed, but we infer, from what is written, that Prof. Gross does not fully accept them, being rather inclined to believe, with Profs. Gunn and Moore, that it is the untorn portion of the capsule, wherever it may be, that causes the difficulty in reduction. That the ilio-femoral ligament does act as Prof. Bigelow claims, and that it is certainly *a* cause if not *the* cause of difficulty in reduction by direct extension, we have repeatedly verified by experiment upon the cadaver.

In the section on "Psoas Abscess" we find it stated, as in the previous editions, that the abscess generally points "just *above* Poupart's ligament." The great majority of writers, as we found upon investigation a few months since, declare that the pointing occurs *below* the ligament.

The chapter on "Diseases and Injuries of the Eye" has been considerably enlarged, and as we notice in the preface, the revision was made by Dr. William Thomson, of Wills Hospital. Valuable additions have also been made to the chapter on "Diseases and Injuries of the Ear."

Respecting extirpation of the thyroid gland we find a somewhat less positive and sweeping condemnation of it than before, and full notice is taken of the successful operations that have been reported during the last five years. The results of electrolysis are also referred to.

In the section on "Affections of the Parotid Gland," Chapter XIII., we find an entire revision of the paragraph on the tumours of this region, as, indeed, might have been expected after noticing the changes that have been made in the chapter on tumours in general. Respecting the age at which these parotid tumours appear, it is declared that they "are generally met with between the thirtieth and fortieth years; encephaloid, myxoma, and enchondroma being usually observed before the twentieth year; while fibromas and sarcomas are almost peculiar to young adults. Scirrhus and epithelioma are essentially affections of advanced life."

In the chapter on "Hernia," due notice is taken of the method of relieving strangulation, and effecting reduction by "withdrawal of the gas and serum from the rupture by means of a delicate trocar." Numerous cases have of late been reported of success attending the use of Dieulafoy's aspirator.

The tabular statement of the "general results of the different methods of lithotomy," shows an increase in numbers over that previously given, of 3411 cases, the addition of which raises the mortality from 1 in $8\frac{5}{7}$ to 1 in $7^4$.

Respecting the opinion of Barwell and others, that "tenotomy as a remedy for club-foot is entirely unnecessary," the edition under review contains the following, not found in the earlier editions.

"As an exclusive practice, it [the treatment by apparatus simply] cannot, I think, be too pointedly condemned. While in some instances it answers the purpose admirably, it is certain that, in the great majority of cases, tenotomy constitutes a most important preliminary step to a rapid and successful cure. My reasons for this statement are twofold. In the first place, tenotomy, when carefully performed, is a perfectly harmless operation; and in the second, the treatment pursued by Barwell, Sayre, and others, requires an amount of skill and attention which few practitioners can command."

Chapter XXI., "Special Excisions of Bones and Joints," remains much as before, the most noticeable changes being in the opinion expressed respecting the value of excision of portions of the bones of the forearm for gunshot injury (which are now stated to have been practised *with* very encouraging results, instead of with *no* very encouraging results as before), and in the statistical tables, which have been brought up to date, use having been duly made, among others, of Ashhurst's statistics of hip-joint excisions, and S. W. Gross' and Otis', of excisions for gunshot injury.

In the concluding Chapter, on "Special Amputations," the principal changes are in the history and statistics of the several operations, which have been made much more full and complete, and in the description of the various new methods of amputating which have been brought to the notice of the profession during the last few years.

In the revision and rewriting, very many verbal alterations have been made, and sentences recast, to the decided improvement of the book; though there is still some room for change for the better, since, *e.g.*, it is as before directed, that "the bowels should be maintained in a soluble condition," and scirrhus is still said to be "often named hard cancer, an expression which was applied to it in the infancy of the science, from some fancied resemblance it was supposed to bear to the claws of that animal." There are still to be noticed some ponderous words of Latin origin, for which, we think, simpler Saxon might advantageously have been substituted, and there frequently occur such translations of technical terms as *burse*, *fistule*, *straight* muscle, *two-headed* flexor muscle, *small pectoral* muscle, *blood-liquor*, *Polish plait*, etc., which we doubt if even Prof. Gross' authority and influence, backed by that of the few others who write in a similar way, can make acceptable to the majority of cultivated physicians. But, while such blemishes are to be regretted, we remember that it has for ages been a recognized fact that "sometimes e'en good Homer nods."

The present edition of Gross' Surgery is more elegant, more complete, more valuable than the editions previously issued, and the work more surely than before is a monument *ære perennius* to the industry and learning of our great surgical authority. P. S. C.

---

ART. XIX.—*A Treatise on Diseases of the Bones.* By THOMAS M. MARKOE, M.D., Professor of Surgery in the College of Physicians and Surgeons, Surgeon to the New York Hospital, etc. New York: D. Appleton & Co., 1872. 8vo., pp. viii., 416.

THIS book, the author announces in his preface, contains the substance of lectures which he has delivered during the past twelve years. "It does not claim to be a complete compendium of all that is known on the subjects of which it treats," the author having, in its composition, followed chiefly the leadings of his individual studies and observations, though he has endeavoured, he tells us, to make up the deficiencies of his own knowledge, by the free use of the materials scattered so richly through periodical literature, "which scattered leaves" he deems it "the right and duty of the systematic writer to collect and to embody in any account he may offer of the state of our science at any given period."

We were at first disposed to regret that the author had not tried to make his book "a complete compendium of all that is known on the subjects of which it treats," but, after a careful reading of the whole volume, are inclined to take an opposite view, and to wish that he had confined himself still more strictly to his own observations; for, whereas the original part of the book is, though brief, really very good, the bulk of the volume, or, as it might be called, the "scattered-leaves" portion, is by no means deserving of the same commendation. Not only is the author's pathology, at times, somewhat antiquated, but his pages are disfigured by numerous errors and omissions, while his style of composition is not so uniformly careful but that it often offends the ear, and occasionally provokes a smile. At the same time, as we have already indicated, the book contains a number of exceedingly interesting clinical histories, and many remarks and reflections which show the author to be a practical surgeon of much skill, and of very good judgment.

In the brief review which we now purpose making of Prof. Markoe's volume, we shall endeavour to point out, with strict impartiality, both what we regard as its merits, and what appear to us to be its faults.

The whole work is divided into an introduction and three parts, which are respectively devoted to Diseases of Bone, Tumours of Bone, and Malignant Diseases of Bone. The introduction does not, so far as we can see, introduce anything, and might, therefore, we think, have been properly omitted.

Chapter I., of Part I., treats of Hypertrophy and Atrophy of Bone. Here we find at once an illustration of what we have said of the good features of the book, and of its defects. An interesting case is recorded, in which, for acute necrosis of the tibia, almost the whole shaft of the bone was removed; there was very little reproduction of osseous tissue, and, when the patient died after two years, the tibia of the diseased side was found to be "replaced in its middle portion by a mere fibrous cord, with some nodules of bone continuous with the sound bone above and below, but not fused together in the middle," the supporting power of the tibia being thus completely abrogated; the fibula had, however "undergone hypertrophy, most marked opposite the deficiency in the tibia, and so considerable, that, on comparing it with its fellow of the opposite side," it was found to be "at least three times its superior in thickness and strength." As Dr. Markoe justly remarks, "a more perfect illustration of simple compensatory hypertrophy" could hardly be found. Following closely after this interesting observation, which is illustrated by means of an excellent wood-cut, we find a reference to the so-called "ivory exostosis" of the face, which is spoken of as "another form of hypertrophy of bone;" but neither here, nor in the chapter devoted to osseous tumours, do we find any mention of the doctrine advocated by Dolbeau and others, that these ivory-like growths originate, in some instances at least, in the mucous membrane of the nasal fossæ and other cavities of the face, under which circumstances they would of course have no claim to be considered as instances of bony hypertrophy; yet here is a "scattered leaf," which, it seems to us, Dr. Markoe would have done well to preserve.

In speaking of atrophy from disuse, the author gives a judicious caution as to the amount of force to be employed in attempting the reduction of old dislocations, and narrates two cases, one occurring in his own practice, and one in that of a colleague, in which, by a very moderate amount of force, fracture was under these circumstances produced.

Chapter II. is devoted to the consideration of "Inflammation of Bone." Dr. Markoe seems to differ from the majority of writers, in that he regards inflammation of the bone proper as a precedent change to inflammation of the periosteum or medulla; at least this is the impression which we derive from his not very clear account of osteitis. We observe that he speaks of the pouring out and subsequent organization of plastic exudations, just as he might have done before the days of Virchow and Cohnheim. Under the head of *treatment*, we find a recommendation of "local bloodletting, blisters, and the careful use of mercury," followed by "issues and derivatives," but no mention of the deep groove cut with a Hey's saw (as advised by Mr. Erichsen), which our experience has led us to consider more efficient, in cases of osteitis, than all the leeches, blisters, or mercurials that can be employed.

Chapter III. treats of Suppuration in Bone, and especially of the circumscribed form of suppuration, or abscess of bone. A sufficiently good account, illustrated by several clinical histories, is given of this affection, but the author falls into the not unusual mistake of attributing to Sir Benjamin Brodie the discovery of the proper and now universally accepted mode of treating these cases: "Mr. Brodie," says Dr. Markoe, "was the first to call attention to these abscesses and their treatment." This erroneous statement is the more inexcusable, because one of the latest "scattered leaves" which issued from the pen of that distinguished writer and able surgeon, the late Dr. George C. Blackman, was devoted to an historical inquiry into this very subject.[1] In the paper referred to, Dr. Blackman showed very conclusively, that the pathology of the cases described by Brodie, that of certain cases described by Hey, of Leeds, and that of the cases which Dr. Markoe has himself described under the name of "Chronic Sinuous Abscess of Bone" (and to which he devotes his next chapter), were the same, and that the use of the trephine in these cases had been resorted to long before the days of the eminent medical baronet. We were much interested in Dr. Blackman's paper when it appeared in the pages of this Journal, and took a good deal of trouble in looking up the references given, and in further pursuing the inquiry, and were thus enabled to trace the history of the operation to even an earlier period than had been done by Dr. B. As the subject is worthy of some little attention, we will digress for a few moments from our consideration of Dr. Markoe's volume, to lay before our readers the fruit of our researches upon this point.

Who was actually the first to trephine a long bone for chronic abscess, we are unable to say, but the operation was certainly done by the illustrious J. L. Petit,[2] in the early part of the last century, on the tibia of a young American, whose symptoms had persisted for three years, and who was about to be submitted, on suspicion, to a course of antisyphilitic treatment, when the great French surgeon fortunately came to the rescue. Petit's doctrines are referred to by Monro,[1] in the Essay on Caries, quoted by Dr. Blackman. The next operation of the kind, of which we have any knowledge, was done by an American surgeon, Mr. Walker,[2] of Virginia, on a negro: the medullary cavity of the humerus was laid open by the trephine and gouge, and the contained pus and some exfoliations removed, the patient making a good recovery.

---

[1] See number of this Journal for October, 1869, p. 378.

[2] Traité des Maladies Chirurgicales, tom. ii. p. 12. Paris, 1790.

The use of the trephine in cases of abscess in bone was, we believe, first formally taught as the proper mode of treatment by David,[3] in his essay which received the prize of the French Royal Academy of Surgery, in 1764. David was followed by Bromfeild[4] in 1773; by Hey,[5] of Leeds, in 1786; by Nathan Smith[6] (in a case of diffused suppuration) in 1798; and by Simons,[7] of South Carolina, in 1825. Brodie's[8] first operation was not performed until 1828.

Returning from this digression, we come to Dr. Markoe's fourth chapter, on Chronic Sinuous Abscess of Bone, which, except for some omissions and a few verbal alterations, is a mere reprint of the author's well-known paper in the *New York Journal of Medicine* for May, 1858. We see nothing in Dr. Markoe's account of this affection, as regards either its pathology or its treatment, to entitle it to be separated from those forms of abscess occurring in bone, which have long been familiar to the profession from the writings of Hey, Brodie, and others.

Chapter V. is devoted to the subject of Diffused Suppuration, or (as Dr. Markoe uses the term) Osteo-myelitis. We have elsewhere referred to and deplored the confusion which prevails among surgeons, as to the proper signification to be attached to the word osteo-myelitis, and much regret that Dr. Markoe has not followed Lidell and other recent writers in giving it the comprehensive meaning to which it is etymologically entitled. The author indeed gives Dr. Lidell's definition of the disease—inflammation of the marrow of the bone—and quotes his description of its three stages, that of carnification, that of suppuration, and that of mortification; but immediately afterwards speaks of a "more healthy form of simple inflammation of the medulla," met with in civil practice, and, as it seems to us, makes confusion worse confounded by using the word "osteo-myelitis," as an equivalent for the "non-limited, diffuse, or infiltrated suppuration" which is met with in the most acute cases. Indeed this whole chapter seems to us very unsatisfactory, and far inferior in every respect to Dr. Lidell's excellent chapter on the same subject.

There is one point on which a word must be said, and that is, with regard to Dr. Markoe's condemnation of the teaching of Prof. Longmore, whose views Dr. M. declares to be "unsound, and founded on an erroneous pathology." As is well known, disarticulation has been recommended by Vallette, Roux, Fayrer, and other surgeons, as the proper mode of treatment in cases of suppurative osteo-myelitis affecting the bones of the extremities, and particularly when osteo-myelitis attacks the bone of a stump after previous amputation in continuity. Mr. Longmore has, on the other hand, contended that, in many cases, conservative measures, the extraction of sequestra, etc., may be sufficient. But, says Dr. Markoe, "the tubular sequestra of which he speaks, and which he regards as always the result of osteo-myelitis, have in fact no connection whatever, in most cases, with this formidable disease," and "the conclusions of Drs. Vallette and Roux are not invalidated by the reasonings of Mr. Longmore." Dr. Markoe's peculiar theory as to the formation of the tubular sequestra in question, will be referred to in another place; but justice to Mr. Longmore compels us to say here, that some of the conditions for which Roux recommends disarticulation, are precisely similar to those described by the British surgeon—even including the tubular sequestra—and that hence Dr. Markoe's criticism seems to us to be based upon a misappreciation of the facts of the case. Certainly Dr. M. cannot have read very carefully the following paragraph, which we extract in the form of a free translation from Roux's memoir:—

---

[1] Medical Essays and Observations, published by a society in Edinburgh, vol. v. p. 291. Edinburgh, 1752.

[2] Medical Transactions, published by the College of Physicians in London, vol. iii. p. 25. London, 1785.

[3] Prix de l'Acad. Royale de Chirurgie, tom. iv. p. 167. Paris, 1819.

[4] Chirurgical Cases and Observations, vol. ii. p. 24. London, 1773.

[5] Practical Observations in Surgery, p. 22. Philadelphia, 1805.

[6] Medical and Surgical Memoirs, p. 109. Baltimore, 1831.

[7] Medical Recorder, vol. ix. p. 385. Philadelphia, 1826.

[8] Works, vol. ii. p. 315. London, 1865.

> "In peculiarly good organizations, this third period [of osteo-myelitis] is not inevitably fatal, since, in the most exceptional cases, a cure may still be obtained by disarticulation. It is in these difficult circumstances that the interior of the bone, detached as a tube, tends to escape outwardly, and that the bone, reduced to its exterior compact layer, becomes covered with solid and irregular deposits, and becomes enormously hypertrophied, producing at intervals on its surface abscesses which are swift to recall the phlegmonous state of the stump [a previous amputation in continuity is supposed], the symptoms and dangers of purulent infection."[1]

We may add that the plate which is given to illustrate this description represents as veritable a tubular sequestrum as any figured by Mr. Longmore.

Dr. Markoe's sixth chapter is devoted to the subject of Rickets, which we are surprised to hear him declare is a disease rarely seen in this country. Upon this chapter we have to remark merely that we think it might have been made better had the author rendered himself familiar with the views of a larger number of writers: Sir Wm. Jenner is a very high authority, but is by no means the only modern authority on the subject of rickets.

Chapter VII. contains a short account of the affection known as Mollities Ossium, Osteo-malacia, or Malacosteon. If we do not misunderstand Dr. Markoe, he represents Sir James Paget as regarding osteo-malacia as in all cases "essentially a fatty degeneration;" but a reference to Sir James's sixth lecture shows that he distinctly recognizes two varieties of the disease—one, which he believes to be the more common in England, and in which there is fatty degeneration; and another, more common in Germany and France, which he calls "the simpler softening of the bone, or osteo-malacia, in which the bones are flexible rather than brittle, and appear reduced to their cartilaginous state." This chapter terminates with a "sketch of the famous case of Madame Supiot," dear to every medical student from the time-honored illustration, which with wonderfully contorted limbs figures in so many surgical text-books.

Chapter VIII. treats of "Fragilitas Ossium," by which term the author appears to mean a disposition, sometimes hereditary, to the occurrence of fracture, without any recognizable disease of the bone or any constitutional disorder. We doubt the wisdom of attempting to give this vague predisposition a definite place in the nosology of bone lesions, and still more the wisdom of applying to it a name which is generally recognized as referring to an entirely distinct condition.

---

[1] *De l'ostéomyélite et des amputations secondaires, etc.* pp. 44, 45. Paris, 1860.

Chapter IX. treats of Tubercular Disease of Bone, a subject which the author justly remarks is acknowledged by all to be "debatable land." This being the case, it seems to us that he would have done wisely either not to commit himself in the matter at all, or to commit himself on the side which is advocated by the best modern authorities; instead of doing this, however, he adopts the old phraseology of "gray granulation," and "crude yellow tubercle," though there is every reason to believe that in at least the majority of instances the so-called "yellow tubercle" of bone is no tubercle at all. Apart from this, the chapter gives a very fair account of the progress of tuberculous disease in bone, the question of treatment being reserved until after the consideration of Caries, which is the subject of Chapter X.

> "Without attempting," says Dr. Markoe, "to define caries, I will content myself with describing it as a disease of the cancellous structure of bone, characterized by a chronic or subacute inflammation, terminating in suppuration, which is partly infiltrated, and partly collected into abscesses, the cavities of which abscesses, after they have discharged their contents, have a tendency to ulceration, whereby sometimes extensive destruction of bone-tissue results."

This very indefinite description (which is so indefinite that we do not wonder that the author hesitates to call it a definition) seems to us in every respect less satisfactory than the ordinary statement which represents caries as simply ulceration of bone; and the fact which seems to be a stumbling block to Dr. Markoe, that suppuration accompanies caries, need not stand in the way, when it is remembered that suppuration likewise accompanies the analogous process—ulceration—of the soft tissues. We cannot agree with the author that the distinction which he makes between primary or idiopathic, and secondary or symptomatic caries, is either useful or justified by any essential diversity in the courses pursued by the two varieties of the affection: the process is the same in both instances, and when the disease is once established its symptoms are the same, whether it is a primary or a secondary condition.

Dr. Markoe's account of the pathological anatomy of caries is chiefly taken from Barwell, and is upon the whole satisfactory; a curious slip is, however, made upon page 98, in saying that "reddish serum" is "converted into pus;" mingled with pus, is probably what is meant. In the treatment of caries, Dr. Markoe places great reliance upon the administration of mercury, both as a cathartic and as an alterative; he also speaks more favourably than most modern writers of the use of setons, issues, and the actual cautery. While acknowledging the importance of rest to the affected part in the early stages of caries, Dr. M. fears that atrophy and degeneration may result from too prolonged disuse, and hence recommends the employment of passive motion when active inflammatory symptoms have subsided. He adds a valuable practical hint, which he says he learned from Dr. A. H. Stevens, that, if the pain and tenderness produced by passive motion last more than twenty-four hours, too much has been done; but that, if the pain caused by the surgeon's manipulations has entirely passed away within that period, he may be encouraged to proceed.

In speaking of the operation of excision, Dr. Markoe refers to White, of Manchester, as having been "the first who by a defined and purposed procedure, undertook the removal of carious bone, he having removed the head of the humerus for caries in the year 1768." This sentence embraces two distinct errors; in the first place, White did not remove the head of the humerus, but left it in the glenoid cavity, taking away merely a sequestrum from the shaft of the bone;[1] and, in the second place, White's operation, such as it was, was preceded by Filkin's excision of the knee, in 1762.

Chapter XI., which terminates the first part of the work, occupies nearly a fourth of the whole volume, and is devoted to the important subject of Necrosis. This affection has evidently been a favourite subject of study with the author, and he gives a very good account of the various predisposing and exciting causes to which the death of bone may be due. "It is popularly believed," says Dr. Markoe, "that fevers do frequently produce necrosis, and hence one popular name of the disease, viz. fever-sore." Whether this is or is not a correct account of the origin of the term "fever-sore," we are not prepared to say, but we note that it differs from the account given by the late Dr. Nathan Smith,[2] writing more than forty years ago, when the term fever-sore was probably more commonly used than at present: "this disease," according to Dr. Smith, "was formerly known in New England under the name of *fever-sore*, given to it undoubtedly because it is generally accompanied, from the very commencement, with a high degree of constitutional irritation and symptomatic fever."

In speaking of the form of necrosis of the jaws met with among workers in phosphorus, Dr. Markoe avows himself unable to explain why the Schneiderian and bronchial mucous membranes, and the bony structures in contact with those structures, do not suffer equally with the buccal mucous membrane and the jaws; but in view of the acknowledged fact, on which he himself lays stress, that the "phosphorus disease" is only manifested in those who have carious teeth or ulcerated gums, or who have recently had teeth extracted, it seems to us that an explanation may be readily found in the great frequency with which carious teeth and ulcerated gums are met with, and in the comparative rarity with which ulceration occurs in the Schneiderian and bronchial mucous membranes.

We have been particularly interested in Dr. Markoe's remarks upon the subject of *hemorrhage* occurring as a complication of necrosis, and quote the following paragraphs, which convey a surgical lesson of the highest practical importance:—

> "I have examined carefully, during the last twenty years, thirteen cases of necrosis in which hemorrhage occurred of sufficient severity to require surgical interference. In every one of these it was the main artery of the region which was the source of the hemorrhage, except in one case, and then it was the vertebral which had been eroded by a fragment of dead bone, from a pistol-wound, which was in a favourable state of healing when the fatal hemorrhage occurred. In each case the coats of the artery were eroded evidently by the direct contact of a sharp edge of the sequestrum, with one exception, and then though the main artery was opened, and a sharp sequestrum was quite near, we could not pronounce positively that the hole observed in the side of the artery was actually due to the pressure of the sharp edge of bone. The number of observations is too small to decide the point that small vessels never bleed from the cause we are studying; but the testimony of these few is so nearly uniform that I think it may safely be accepted as a pathological law, and I am quite sure it

---

[1] Hodges, The Excisions of Joints, p. 22. Boston, 1861. And Holmes's System of Surgery, vol. v. p. 667. London, 1871.

[2] Op. cit., p. 97.

affords our soundest practical indication. Precisely what that indication is, must be settled by the features presented by each case; but it is hardly necessary to say that the remedy does not consist in the mere removal of the cause of the mischief, that is the sharp edge of the dead bone. When that is removed, there remains the opened artery to be cared for, and, if my position is correct, that this opened artery is a main trunk, very little hope can be entertained that nature will be able to close the wounded vessel without assistance from art.

"Two courses present themselves to the surgeon in this serious emergency: The first is, to make an attempt to reach and tie the wounded vessel; and the second is, to amputate, if the ligature cannot safely or successfully be undertaken. The point of urgent importance, however, is, in my judgment, not to delay till a sudden gush of blood places your patient beyond the hope of benefit from any operation, be it ever so clearly indicated, or ever so skilfully performed."

After considering the subject of necrosis in general, Dr. Markoe takes up in succession several varieties of the affection, as follows: "1. Superficial necrosis or exfoliation. 2. In heads of bones near joints. 3. In cranial bones. 4. In jaw-bones. 5. After fractures. 6. After amputations. 7. Without suppuration. 8. Without exfoliation." Dr. Markoe seems to us to undervalue the seton (p. 156) as a means of hastening the separation of deep-seated sequestra: in the form of the oakum seton or tarred rope, as recommended by Dr. Sayre, we have frequently employed it under these circumstances with very satisfactory results.

We turn with interest to the section on *Necrosis after Amputations*, for it is here that the author explains his theory of the occurrence of the tubular sequestra, which have been already referred to. The symptoms which attend the formation of these sequestra are well described, and clear directions given for their extraction by operative measures. Referring to the inner cylinder of living bone which is occasionally found within the sequestrum, the author expresses his belief that it "has not been noticed by any who have written on this subject." This we hardly need say is a mistake. The occurrence of ossification of the medulla within a sequestrum, has been distinctly recognized by Ollier and other authors, and illustrative cases have been published by several writers, among whom we may particularly mention Dr. J. H. Packard and Dr. Wm. Pepper,[1] of this city. With regard to the origin of these tubular sequestra, Dr. Markoe advances a theory (which we believe is peculiar to himself), that the death of the bone is due to the division of its nutrient artery, either by the knife or saw, the inner layer of compact tissue (which is supplied through the medulla) perishing in consequence, though the medulla itself maintains its vitality by means of its connection with the upper and more vascular part of the bone, while the outer layer of compact tissue is sustained by the periosteum. But this theory (which is purely hypothetical), though sufficiently ingenious in its application to cases of thigh-amputation, does not, we submit, explain the occurrence of tubular sequestra either in cases of amputation of the upper arm or leg,[2] or in cases (such as Dr. Pepper's, already referred to) in which no amputation at all has been performed. On the other hand the ordinary explanation, which attributes the formation of these sequestra to the existence of a subacute or chronic form of osteitis, accompanied, as that always is, by inflammation of both periosteum and medulla, seems to us perfectly reasonable and satisfactory. The symptoms which accompany the formation of tubular sequestra are indeed, as Dr. Markoe justly remarks, not those of acute suppurative osteo-myelitis, but they are, we maintain, just such as are met with in cases of the milder and more chronic forms of bone-inflammation, to which we have referred.

---

[1] See numbers of this Journal for July, 1868, and April, 1870.

[2] In the case of the *femur*, as pointed out by Dr. Markoe, the nutrient artery passes *upwards*, and its division in an amputation would, in some appreciable degree, cut off the blood-supply of the upper part of the bone; but in the cases of the *humerus* and *tibia*, the nutrient arteries pass *downwards*, and amputations which would cause their division would likewise remove those parts of the respective bones which might be expected to perish in consequence. Moreover, in the case of the humerus, the nutrient artery is given off directly from the brachial, and, if Dr.

We observe, with some surprise, that Dr. Markoe seems still to believe in the existence of a distinct endosteum or medullary membrane.

In the section on *Necrosis without Suppuration*, we find no reference to Sir James Paget's recently published observations on this subject, nor to the analogy pointed out by the same author and by the late Mr. Teale, between these cases and those of loose cartilage in the knee-joint.

Dr. Markoe's remarks on the *treatment* of necrosis are practical, and generally judicious: he makes no mention, however, of what we regard as two excellent remedies, viz. : (1) cutting a groove with a Hey's saw in the bone threatened with necrosis, when simple incision of the periosteum proves insufficient, and (2) introducing a tarred rope or oakum seton as a means of hastening the separation of deep-seated sequestra.

We find no reference in any part of this chapter to that peculiar variety of necrosis which we have elsewhere ventured to designate (in contradistinction to the ordinary form of the disease) as *moist necrosis*, and which Dr. Lidell has so admirably described under the name of *mephitic gangrene of bone*.

This review has already occupied so much space that we must content ourselves with very brief comments upon the second and third parts of Dr. Markoe's volume. The account given of non-malignant tumours of bone is, upon the whole, tolerably satisfactory, the pathology and description of the microscopic appearances being chiefly compiled from the writings of Paget and Billroth, while interspersed are numerous interesting clinical histories derived from the practice of the author and his colleagues. Dr. Markoe suggests another name, in addition to the many already in use, to designate the group of tumours which are variously known as the fibroplastic, recurrent fibroid, spindle-celled sarcomata, etc., and proposes that these growths should be called "spindle-celled fibroids." We think the definition of myeloid tumour would be improved by the use of the qualifying term "fœtal;" for, though the "*myéloplaxes*" are met with in adult marrow (particularly when inflamed), they are especially characteristic of the medulla of fœtal life. In speaking of excision of the upper jaw, Dr. Markoe refers to Jameson's famous operation in 1820, as being "recognized as the first:" this is a mistake, for, whereas the first *complete* excision of the jaw (Jameson's was a partial operation) was done by Gensoul in 1827, *partial* excisions had been frequently performed at an earlier date, the history of the operation indeed dating back to the time of Acoluthus in the 17th century.

Perhaps the most interesting and really valuable part of Dr. Markoe's volume is the concluding portion, which treats of malignant diseases of bone. Here he seems to have relied more than elsewhere upon his own

---

Markoe's theory were correct, ligation of the brachial in its upper part ought to cause internal necrosis of the humerus—a result which, it is scarcely necessary to say, does not occur.

resources, and he has certainly produced a valuable practical contribution to the literature of his subject. At the same time there is here apparent the same lack of information, as to what others have accomplished in the same field, which has been noticed in the previous portions of the work; as an illustration we need only mention that, in the pages devoted to epithelioma or epithelial cancer affecting the front of the leg and tibia, the names of Marjolin, of Cæsar Hawkins, and of Collis, do not once occur. Still this part of the book, and particularly the very judicious remarks on treatment, with which it concludes, have upon the whole impressed us more favourably than any of the earlier portions of the volume.

There yet remains for us to justify one criticism which we have ventured to make, and this is as to the peculiarities of Dr. Markoe's style. As illustrations, which might be multiplied almost indefinitely, we select the following: "It is not easy to say why the disease should differ in its behaviour in these bones from the course it pursues elsewhere" (page 157); how can a *disease* be said to differ from the *course* which it pursues?—"a case, recently amputated at Bellevue Hospital, commenced in a finger" (page 220); how can a *case* be amputated, and how can it commence in a finger?—"Large quantities of blood issuing rapidly from a case of necrosis" (page 132); a sentence which might refer to epistaxis or bleeding piles, as well as to the form of hemorrhage intended—and, finally, "The tumours shown in Figs. 99 and 100 were both young men, one eighteen, the other nineteen years old" (page 349). Though the book is handsomely printed (and rather uncommonly well illustrated) it contains some curious specimens of proof-reading; thus, in the short space of three lines, on page 280, we find Sir Wm. Lawrence called Mr. Laurence; Mr. Mitchell Henry, Mr. Mitchill Henry; Mr. Cooper Forster, Mr. Cooper Foster; Mr. Cock, Dr. Cock; and Dr. Wilks, Dr. Wilkes. Again (pp. 195, 196), we are told that a patient had his thigh amputated in May, 1855, and was discharged cured, in May, 1868, though from the history of the case it would appear that the whole course of treatment occupied but a single year.

If in the preceding pages we have seemed to dwell more upon the faults of Dr. Markoe's book than upon its good points, it is not because we are insensible of the latter. Though as a "Treatise on Diseases of the Bones," the work must, we think, be regarded as a failure, it has undoubtedly considerable value as an interesting record of individual surgical experience; and as such we heartily recommend it to the attention of our readers.

J. A., JR.

---

ART. XX.—*Lehrbuch der Geburtshülfe mit Einschlus der Pathologie der Schwangerschaft und des Wochenbettes*, von Dr. KARL SCHROEDER, ordentl. offentl. Professor der Geburtshülfe und Director der Entbindungalnstalt an der Universität Erlangen. Mit 26 in den Text gedruckten Holzschnitten. Dritte, neu durchgearbeitete Auflage. 8vo. pp. xiv., 698. Bonn: Max Cohen & Sohn, 1872.

*Manual of Obstetrics.* By Dr. KARL SCHROEDER. Third revised edition. Bonn: Max Cohen & Son, 1872.

FOR some time past the need of a treatise on obstetrics, embodying the recent advances in physiology and pathology, has been felt to be a pressing want in Germany. It has been evident that, in spite of the zealous efforts of Grenser, in Dresden, to maintain the reputation of Naegele's text-book, which has so long held the first place as an almost classical work, the time had come when such an attempt could not but result in failure, the old framework being strangely out of harmony with the new additions. Many authors have endeavoured to supply this want, but the text-books of Scanzoni, Hohl, Braun, Lange, and others have not recognized the fact that a thorough revision of the work was necessary, and have consistently repeated time-honored theories and hereditary errors; their efforts being mainly directed to the perfection of the mechanical portion of obstetrics, viz., improvements in instruments, modifications of operative procedures, etc., and to the therapeutical treatment of the various complications of labour and child-bed.

Not long since an attempt was made at Innsbruck to unite the younger talent, and, by a division of labour, to bring prominently forward, in a condensed form, the results of special researches in the physiology and pathology of gestation and parturition. The co-operative method of authorship has become popular in Germany on account of the success which has attended the publication of Billroth's Surgery, Stricker's Manual of Histology, and other similar works, where, by restricting the field of labour, real and valuable additions have been made to our own knowledge in special branches. Unfortunately the attempt failed, fell "stillborn," to use a pardonable simile; but meanwhile Prof. Schroeder had devoted himself to the task of gathering together the results of his own investigations, and of developing a system of obstetrics having its foundation on the basis of modern physiology and pathology. The book which is the subject of this review is the result of his labour, and, although it is necessarily incomplete in many parts, as the author himself confesses, it must, nevertheless, be regarded as a most successful accomplishment of his laborious task. The experimental study of the physiology of gestation and parturition is of recent growth, and hence numerous points are still involved in the greatest obscurity, and many questions must be left unanswered; but this much at least is due to the student, that transmitted errors and unsupported theoretical statements shall not appear sanctioned by the addition of a new name; far better is it to tear away the flimsy veil which hides the existing gaps and spaces, and point out the need of closer scientific investigation of processes which are at present but imperfectly understood. By this means new life is infused into a science, and each reader is stimulated to original research, which sooner or later will bring in a rich harvest of accurate facts. That this is the spirit in which this book has been written is evident from a passage in the introduction, in which the author writes: "Beyond question the chief object of scientific teaching is to stimulate the student to think and investigate for himself."

The general plan of the work is that which is usually adopted, viz., a primary division into the physiology and pathology of obstetrics, but where any direct practical advantage could be gained by the grouping together of kindred phenomena, the author has not hesitated to sacrifice the unity of the work for this purpose. For instance all forms of hemorrhage are considered from a common stand-point, although a strict adherence to the scheme of the book would have rendered it necessary to treat them separately, under the respective pathological conditions to which they owe their origin. So, too, the group of symptoms occurring after delivery, having in common the property of septic infection, are, on account of the great importance of presenting a complete clinical picture of the protean forms which this disease may assume, treated under the one head of puerperal fever. Though these deviations from a strictly logical division of the subject may give rise to captious criticism, the reader of this book who turns to it for practical instruction, will gladly pardon this fault, if it be one, in return for the benefit which he derives from it.

The author justifies the striking omission of any anatomical description of the pelvis, by a reference to the elaborate details furnished by works on descriptive anatomy. While this is undoubtedly true, we cannot but feel that the importance of a thorough and intimate knowledge of the obstetrical pelvis justifies us in expecting a more than passing notice of this subject in a special text-book, and, if the English translation, which is promised, is to become—as we both hope and believe it will—the general work of reference in this country, a more extended treatment of the anatomy of the pelvis is absolutely necessary. The subject of the pelvic planes, axes, diameters, and inclinations is one which presents many difficulties to the students, and points of interest to the specialist. The angle which the plane of the superior strait makes with the symphysis pubis is a matter of the greatest importance, in fact, as Kiwisch has stated, "the consideration of this anterior wall of the pelvis, is of *far greater* importance in a practical point of view, than the minute investigations which have been made to determine the angle of inclination of the entire pelvis," because when this angle is exaggerated it oftentimes becomes the direct cause of tedious and difficult labour, and yet three lines have been considered by the author sufficient to exhaust this subject.

The views of Pflüger with regard to the cause of the phenomena of menstruation are thus summarized :—

> "A constant irritation is exerted on the extremities of the nerves imbedded in the fibrous stroma of the ovary by the slow but uninterrupted growth of the Graafian follicle. This is not sufficiently intense to produce reflex action at once, but in the intermenstrual period, the total irritation (die Summe der Reize) is so great that reflex action takes place in the form of marked arterial congestion. This sudden increase in the amount of blood produces essentially too results; in the first place, that Graafian follicle which is the farthest advanced in development ruptures, in consequence of the increased intra-follicular pressure; while, in the second place, a hemorrhage takes place from the free surface of the uterine mucous membrane; hence the escape of the ovum from the follicle, and the menstrual flow, are joint effects of one and the same cause, viz., the pressure which the developing follicle exerts on the extremities of the nerves, which are distributed throughout the ovarian stroma."

It would be easy to disprove this theory by reference to the experimental proof which ovariotomists have incidentally furnished in operations involving the removal of both ovaries, where the menstrual flow, proceeding from the mucous membrane of the uterus, still continued; but, regarding it simply from a histological stand-point, its value is somewhat impaired by the reflection that, up to this time, our knowledge in regard to the ultimate distribution of the ovarian nerves amounts, practically speaking, to nothing. As the result of special study on this point our own observations have led us to acquiesce fully in the statement of Waldeyer,[1] that "single nerve fibres are seen entering the hilus of the ovary, with the vessels, and dividing as they reach the parenchymatous zone, into which, in spite of the use of the chloride of gold solution, (which has been of such signal service in the study of the nerves of the cornea and the human skin), I have not been able to follow them, still less to form any clear idea of their ultimate distribution."

---

[1] Waldeyer Eierstock u. Ei. p. 18.

The ingenious theory of Thury with regard to the formation of the sexes at will, by regulating the time of coition, has not been confirmed, at least so far as the human race is concerned, by the experience of the author. According to this theory, females are brought forth by the lower animals if impregnation takes place at or near the commencement of the time when they are "in heat," while males will be produced if the fruitful contact does not take place until the end of this period. In 29 cases when this theory was experimentally tested on cows, the wished-for result was obtained in each instance. Coste, however, did not confirm this observation, and Schroeder writes: "In cases when the date of the appearance of the menses and the time of cohabitation were accurately known or given, I have calculated the interval between these terminal dates, and found, that in 29 cases where males were born, the fruitful connection took place, on an average, 10.08 days after the appearance of the menses, while 9.76 days represented the same average result in cases where the product of conception was of the female sex; hence I am not in a position to extend to the human race this hypothesis of Thury."

In speaking of the position of the fœtus in utero, attention is called to the extreme ease with which changes take place in the relation of its long axis to that of the uterus. Scanzoni, even in the earlier editions of his text-book, called attention to the great mobility of the child, and to the spontaneous conversion of breech and transverse presentations into those of the head, and *vice versa*, even in the latter weeks of gestation. Credé confirmed this observation, and showed that this change takes place far oftener than is usually supposed, for, out of 240 recorded cases in the Leipzig clinic, there were only 7 in which the original position of the child was maintained unaltered to the end of pregnancy. In one case mentioned by Scanzoni, in the last edition of his text-book, the child turned six complete somersaults within five days, presenting now the head and again the breech. The value of this observation in its application to version by external manipulation during the latter weeks of pregnancy, as a mode of converting transverse into head or breech presentations, need scarcely be hinted at.

With the exposition of the physiology of parturition the real difficulty in the work commences, for each step in the process is still involved in more or less obscurity, and a description which represents truthfully the present state of our knowledge, must, of necessity, be incomplete and unsatisfactory. Take, as an example, the first question discussed, viz., the proximate cause of labour, and we find ourselves at once involved in uncertainty as to the relation which the uterine nerves bear to the motility of the organ. Relying on anatomical preparations and physiological experiments, Schroeder feels justified in asserting that "the sympathetic is the motor nerve of the uterus, but whether the sacral nerves can excite uterine contraction, or whether they should not indeed be regarded rather as inhibitory nerves, is a question which, to say the least, requires a doubtful answer." Towards the end of the tenth month the sympathetic is excited to reflex action by the irritation which the ovum exerts on the internal surface of the uterus, since at that time it has become a foreign body, owing to the fatty degeneration of the decidua destroying the vital connection which has existed between it and the inner surface of the organ. By the slight contractions which are thus evoked by reflex action, still further separation of the decidua takes place, while this in turn gives rise to new irritation, so that the uterine contraction which has been awakened gradually increases in intensity and duration.

The condition of the cervix uteri during the later months of gestation is carefully described, and the observations of Holst, Duncan, and Taylor confirmed. The description of the shortening of the cervical canal, or the modification of this theory by Stolz and Cazeaux, which has for years been blindly copied from one treatise on obstetrics to another, are not found, but in their place a true and succinct account of the changes which take place as developed by a careful clinical study of the subject. In primiparæ the head enters the pelvic cavity at the end of the ninth or beginning of the tenth month, and depresses the anterior vaginal fornix to such an extent that the anterior lip of the cervix is effaced, the mucous membrane seeming to be inserted on a level with the external os. That the cervical canal, however, remains in its integrity can easily be proved by hooking the finger into the os uteri as soon as the first labour-pains have sufficiently dilated it, and straightening out the canal, when the internal os will be found at a distance of about three c. from the external orifice, so that the shortening of the canal is only apparent, not real. Attention is also called to the different condition of the internal os in primiparæ and multiparæ. In the first case it is an exceptional occurrence for the os internum to be sufficiently open at the ninth month to admit the point of the finger, while in multiparæ this is the normal state of affairs, so that the bag of waters, or even the presenting part, is accessible to the finger. In women who have borne children, the head does not usually enter the pelvic cavity before the first contractile efforts of the uterus, but, owing to the relaxed walls of the organ, inclines more or less towards the right or left iliac fossa, and is reached with difficulty, owing to the ease with which it escapes the examining finger, while in primiparæ the head usually enters or even descends into the pelvic cavity before labour commences.

Although presentations of the face and breech are included in the description of normal labour, the author has deemed a word of explanation or apology necessary in order to justify this deviation from a strictly scientific treatment of the subject. Presentations of the vertex should alone be considered as entirely normal, and even among these we find certain changes in the attitude of the child, caused by the greater or less departure of the chin from the breast,, which must be regarded as deviations from the normal type. These deviations glide, however, so insensibly through arrested vertex to brow and face presentations, that no dividing line can be drawn, and it seems altogether advisable, as Schroeder has done, though evidently not without the reluctance which a German always feels at abandoning a fine-drawn distinction, to consider all cases, when nature unassisted is able to complete the labour if no disturbing elements are present, under the head of the normal mechanism of labour. The adoption, both in England and this country, of the German method of classifying the positions of the child, should be strongly urged. The want of harmony in the use of obstetrical terms is felt more and more acutely each year, as the intercourse between scientific men of different nationalities becomes more intimate and general. The primary division adopted throughout Germany into two positions, head and breech, is attractive on account of its simplicity, while it is sufficiently extensive to admit of a full development of the theory of the mechanism of labour.

> "In presentations of the head and breech, the 'position' (stellung) of the child is of great importance in the consideration of the mechanism of labour. We have to decide, therefore, whether the back of the child is turned towards the right or left side of the uterus, and judge accordingly of the first or second position of the head or breech. It is also of importance to learn whether the head occupies a position nearly transverse, or is inclined more anteriorly or posteriorly. In the first position the head is usually turned more towards the front, in the second, more towards the back part of the pelvis, though this rule is by no means without exception."

The diagnosis of presentation and position by external examination is thoroughly treated, and its advantages in supplementing and corroborating the internal examination, and indeed, in some cases, in supplanting it, for instance where an unusually high stand of the head, or the formation of an extensive caput succedaneum renders the recognition of the position difficult or impossible, are prominently brought forward. The value of this method of examination has lately been urged upon the profession in a valuable monograph[1] by Dr. Richardson, of Boston, in which the subject is treated with the fullest detail. Halbertsma has suggested that this method should alone be used in the examination of patients during the prevalence of puerperal fever in large lying-in institutions, where it is desirable to avoid even the possibility of the examining finger carrying with it septic material.

The mechanism of labour is rendered somewhat complicated to English readers by the adoption of two new technical terms, introduced by Schatz, which can hardly be represented by English synonyms.

> "In the first place the entire contents of the uterus, the ovum as a whole, is exposed to a uniform pressure, which Schatz designates as the internal uterine pressure. Since the muscular layers of the fundus are more developed than those of the lower portion of the organ, and since the internal os presents a space free from muscular tissue, the ovum is driven by this force towards this point, and effects its dilatation. Secondly, the uterus by its contraction tends to assume as globular a form as possible, and this takes place by the diminution of the long and transverse diameters, inasmuch as the antero-posterior diameter when the organ is relaxed is disproportionably small. The uterus is, therefore shortened from above downwards, and in the transverse diameter, and this effort to assume the globular form it is, which Schatz calls, 'formrestitutionskraft,' or the force exerted by the attempt to assume the mormal shape."

It is evident that these two forces correspond closely with those designated in English by the terms "clonic" and "tonic" contraction of the uterus, the one leading to the expulsion of the fœtus, the other, by the shortening of the transverse diameter, bringing the long diameter of the fœtus into correspondence with the long diameter of the uterus, while the contraction in this diameter assists in forcing the head to engage or descend into the pelvic cavity. It is no easy task to follow the description of the influence which these two forces, designated by initials only, exert, but the effort is repaid by the explanation of several phenomena which otherwise are with difficulty understood: for example, the formation of a caput succedaneum on the presenting head before the rupture of the bag of waters. One point in the description of the mechanism of labour is, however, of especial interest, viz., the importance which Schroeder attaches to the resistance of the perinæum in producing anterior rotation of the head. The inclined planes have little or nothing to do with the process, nor need we invoke any complex theory involving the well-known parallelogram of forces, for the explanation lies in the simple fact that, owing to the complete flexion of the head, the posterior fontanelle is the part which descends deepest into the cavity of the pelvis, and is exposed first to the greater resistance of the posterior wall of the pelvis, and subsequently to that of the distended perinæum, which turns or presses it anteriorly, where there is comparatively no resistance until the locking of the occiput under the symphysis pubis allows a process of extension to take place. The perinæum only slowly distends, owing to the fact that the resistance it offers is nearly equal to the expulsive force, transmitted through the spinal column of the child, and during this time the occiput is pressed forwards towards the vulvar outlet by the upper part of the pelvic floor, so that whether the head presents with the occiput anteriorly or posteriorly, its rotation forwards is the rule, with but *few exceptions;* nor are these exceptional instances difficult of explanation, for we find, in certain cases in which slight pelvic contraction usually exists, that the anterior fontanelle enters and descends into the pelvic cavity as the presenting part, and hence is exposed to this same pressure from the posterior wall and perinæum, so that rotation anteriorly must ensue, as in the first instance, or, in other words, we have those exceptional cases where the occiput rolls into the hollow of the sacrum, and the forehead comes under the arch of the pubis. But even in these exceptional cases, when the anterior fontanelle engages first, when the head has reached the floor of the pelvis, the posterior fontanelle usually descends until it becomes the lowest part, and then the normal rotation anteriorly takes place. These are the cases in which rotation is so easily effected by the lever or forceps, in other words, where mechanical interference has effected that which nature would herself have brought about at the proper time.

---

[1] External Manipulations in Obstetric Practice, by W. L. Richardson, Boston.

In the portion of the work which relates to operative obstetrics we find a full and exceedingly practical discussion of the indications for the various operations, their relative value, and the influence which they exert on the life of the mother and child. The description, however, of the successive steps in each operation is condensed and brief. The instruments are described only in their simplest forms, and no attempt has been made to render the subject more easy of comprehension by illustration. We find the explanation of this want of detail in the fact that the author fully recognizes the necessity of continued practice on the phantom, or, better still, the maternal cadaver, in order to acquire facility in the mechanical execution of obstetrical operations, believing, as he does, that without this the most accurate descriptions and profuse illustrations are worthless. In surgery this fact has long been recognized, and attendance on a course of operative surgery has been considered indispensable, but in obstetrics the student has been left to perform operations requiring great manual skill and dexterity, with no other preparation than listening to the verbal descriptions of the lecturer.

With regard to the question which at present excites so much interest in this country, viz., whether the forceps should be applied to the sides of the child's head, or in relation to the sides of the pelvis, thereby grasping the head in an oblique diameter, Schröder only reiterates the teachings of the most prominent German and English authors. Nor is this to be wondered at, for the instrument which he employs does not compress the head to any great extent, but is intended simply to supplement a deficient *"vis á tergo."* The character and object of the special instrument used should determine its mode of application, and hence it is manifestly unjust to apply the rules for the application of one pair of forceps to another instrument constructed on a different plan. In the German forceps represented by the various modifications of Naegele's, and in the English of which Simpson's may be regarded as the type, the greatest width of the blades from each other being three inches, no great compression of the head can be effected, and the normal mechanism of labour proceeds undisturbed within the blades. That this really takes place in most cases when there is no contraction of the pelvis cannot be doubted; the testimony on this point is unanimous, and in some cases its value is increased by the fact that it comes from unwilling witnesses. Scanzoni, who advocates a method of application peculiar to himself, whereby a rectification of position is effected, writes that "this rotation of the head within the blades of the forceps certainly does take place," but adds that it is more tardy than when artificially produced by the operator. With regard to the application of the forceps *on the sides* of the movable head, the sagittal suture occupying the transverse diameter, Schroeder says, "in order to grasp the head in the biparietal diameter, the blades must lie in the antero-posterior diameter of the pelvis. But, since they *cannot* be applied in this diameter, nothing is left, when the head is transverse, but to apply them in the oblique diameter." The application of the forceps on the movable head has however been abandoned by the common consent of the leading obstetricians both in Germany and England, and version by the feet is the operation which promises the most both for mother and child. Since Michaelis proved that contraction of the pelvis, more or less marked, is usually found in cases where the head remains movable and does not engage in the superior strait, and Simpson supplemented this teaching by his admirable paper showing the advantages which result in the extraction of the after-coming head in moderate deformity of the pelvis, both as regards the facility with which moulding can be effected, and the command which the operator has on the termination of the labour, the testimony of nearly all of the prominent obstetric teachers has been in favour of version by the feet, in preference to the difficult if not impossible application of the forceps on the movable head; witness the papers on this subject by Hohl, C. and G. Braun, Spaett, Scanzoni, Hecker, Schroeder, Barnes, Braxton Hicks, and other distinguished writers. In the conditions justifying the use of the forceps, we find it stated that "the cervix uteri must be effaced, and the os uteri at least sufficiently dilated to allow of the easy passage of the head." To this postulate many, we think, will object, for it excludes the use of the forceps in cases where the os uteri is sufficiently dilated to allow of their application, but not to admit of the passage of the head, until by means of traction efforts the head, grasped by the forceps, acting as a wedge, gradually causes dilatation. In these cases many hours might pass by before the complete dilatation which Schröder insists upon is effected and the propitious moment for the operation be lost.

In the rules for the manual extraction of the retained head in breech presentations, we find that, after a century of vain efforts to devise some means by which the critical moments when the child hangs between life and death shall be shortened, the manipulation recommended by Smellie and subsequently introduced into Germany in an objectionable form is again revived and made popular by Veit, and is now gradually superseding the use of the forceps, the "Prague manipulation" and other modifications. Since the use of the forceps has been abandoned, the statistical results have shown a steady increase in the number of children born living in breech presentations. In the hands of Seifert and Scanzoni who employed the "Prague manipulation," 117 children out of 152 were born alive, but this method was not without danger, for in several instances the vertebral column of the child was luxated, and in at least one case the body was torn from the retained head, so great was the leverage exerted. On this account this mode of delivering the head has been abandoned in the Vienna clinic, and in most of the large lying-in hospitals on the continent, and Smellie's method or a modification of it substituted.

In recounting the indications for perforation we find a clear, honest, outspoken vindication of the performance of this operation on the *living* child, when the condition of the mother demands the completion of the labour while there is little or no hope of saving the life of the child.

> "If the child is alive, the head must be perforated when a speedy termination of the labour is demanded on the part of the mother, while it cannot be effected in a manner which is not injurious to the child (forceps, version) and the mother refuses her consent to the Cæsarean section. This operation is then a justifiable one, because in all these cases, if the preservation of the life of the child is not absolutely impossible, it is in the highest degree improbable, while by longer delay the life of the mother is placed in the most imminent peril. That physician who adopts this rule for his guidance will be the means of saving the lives of many mothers, while he who refuses to perforate the head of a living child, or who does so only in the most extreme cases, will sacrifice one mother after the other, while he will not succeed in preserving the life of scarcely a single child."

This accords so perfectly with the moral aspect of the question which generally prevails in this country, that these words will attract but little attention, but in South Germany this emphatic statement will bear with it great weight, and will lead, it is to be hoped, to the immediate performance of the operation when the indication is clear, instead of having recourse to version by the feet, and, after a hopeless attempt at extraction, allowing some moments to elapse until the question of the life of the child has been *conscientiously* (!) eliminated, and then proceeding to perforation of the after-coming head, an operation which, although not involving any unconquerable difficulties, is certainly less easy of execution.

It is in the performance of craniotomy in cases of high contraction of the pelvis, that American literature will repay attentive consideration on the part of German obstetricians. In neglecting the use of the craniotomy forceps, destined to remove pieces of bone and thus to decompose the cranial vault, and what is, or should be, the chief aim of the operator, to destroy the integrity of the base of the skull, they deprive themselves of a most valuable aid in the performance of this operation. Simpson's cranioclast and kindred instruments cannot be used advantageously in cases of great deformity, for the head is in point of fact thrown more or less in front of, and overhanging the pubic symphysis, so that an instrument like the duckbill forceps of Dr. Meigs is the only one which will be of use. That this is a "long and tedious operation" cannot be denied, but its comparative safety, in cases of marked pelvic contraction, to compression with the cephalotribe, when a diminution in one direction involves, to a certain extent, a corresponding increase of pressure in the diameters not occupied by the forceps, or Paget's "cephalotripsie répétée sans traction," by which the mother is exposed to the risk of pelvic infection, should lead to a careful trial of its merits in a country where deformities of the pelvis are so frequent in occurrence and so serious in character as in Germany.

The operation of version by external and internal manipulation has been so thoroughly developed by Braxton Hicks and Barnes, and the German literature on this subject has become so thoroughly incorporated with English teaching, that we find but little that is new to American readers with regard to this operation in the text-book under consideration.

After a general consideration of anomalies in the force and character of the labour-pains, and the obstructions to the birth of the child which may be caused by the existence of tumours of the vagina, uterus, ovaries, etc., the author proceeds to the consideration of deviations from the normal construction of the bony pelvis, and this portion of the book it is which will render it especially valuable to students of obstetrics in this country, for heretofore there has existed an absolute want of any scientific writing on this subject. The text-books intended for the use of midwives in Germany describe pelvic contractions more fully and satisfactorily than the most elaborate treatise which has been published in this country. We have, indeed, taken a certain amount of national pride in the fact, that contractions of the pelvis having their origin in rachitis or other causes are not to be found among us, are not, in fact, a part of our free institutions. But the admirable paper of Dr. Parry[1] proves that rachitis does exist, among our lower classes at least, in about the same proportion as that in which it is found in each of the large cities of Europe, and the pelves of those children who have in their infancy suffered from rachitis, must present, in the parturient woman, peculiarities which the practitioner, who is on the alert for these changes, cannot fail to detect. Since the publication of Michaelis's[2] work on the contracted pelvis, attention has been more and more turned to the fact that a diminution in the conjugate diameter, more or less marked, is the common cause of abnormal presentations, prolapse of the cord, premature rupture of the membranes, tardy dilatation of the os, wedging, and œdematous infiltration of the anterior lip of the cervix, with secondary uterine inertia, or tetanus uteri. These conditions are so commonly associated with pelvic contraction that their existence should always lead to a careful examination of the capacity of the brim. In the treatment of this subject, Schroeder has again sacrificed unity of arrangement for practical utility, and, having separated the two forms of contraction which are of common occurrence from those rarer types which possess only scientific interest, has developed for these alone the mechanism of labour, and laid down the principles by which the treatment should be decided. Attention is especially directed to a form of contraction which has heretofore met with no recognition in this country, where the alterations produced by rachitis and osteomalacia have alone been studied. And yet this form is so common that, according to some authors, it is found oftener than all the other forms put together. The description of the "simple flattened non-rachitic pelvis," by Schroeder, contains nothing new, being based as it is on the previous labours of Michaelis and Litzman; but the importance of the subject justifies a translation of his condensed account of the peculiarities of this special contraction, which is readily recognized, and which, when understood, furnishes the explanation of many cases of delayed and difficult labour.

---

[1] American Journal of the Medical Sciences, January and April, 1872.

[2] Das Enge Becken, G. A. Michaelis.

"At the first glance it has the appearance of a normal, nay, even of an unusually well-formed pelvis; by instrumental measurement, however, the flattening (abplattung) in the conjugate diameter is readily discovered. This is caused by the projection of the sacrum into the pelvis, without, however, a rotation taking place on its tranverse axis. Hence the antero-posterior diameter is shortened in every pelvic plane, but principally in the superior strait; so that the relation of the antero-posterior diameter of the cavity and the outlet to the conjugate is approximately the same as in the normal pelvis. At the same time, a nearly equable diminution in the size of all the pelvic bones, especially the sacrum, is manifest, so that the transverse diameter would also be shortened, if the sinking forwards of the sacrum did not prevent it. For since this bone is attached to the posterior superior spinous processes of the ilium by strong, unyielding ligaments, great traction must be exerted at these points by the anterior inclination of this bone. If the pelvic ring was not closed anteriorly at the symphysis pubis, it is evident that the iliac bones would of necessity be separated thereby the one from the other. Their firm union at this point preventing this, however, this great traction on the posterior spines, while the bones are relatively yielding, must increase to some extent the transverse diameter, and cause the symphysis pubis to approach somewhat nearer the sacrum. Given, then, a pelvis equally contracted in all diameters, this result would follow a marked projection of the sacrum into the pelvis, if occurring in early youth, viz., the antero-posterior diameter would be somewhat shortened while the transverse diameter would be lengthened by the traction on the posterior spinous processes of the ilium; this increase would, however, be counterbalanced by the approach of the symphysis to the sacrum. The transverse diameter is, therefore, increased, the conjugate for two reasons diminished, but since the pelvis was originally somewhat contracted in all diameters, the tranverse has become normal, while the antero-posterior is notably diminished. As regards the cause of this deformity, the prejudicial effect of encouraging little children to sit up and run around at too early an age, and also of allowing them habitually to carry too heavy burdens, whereby the weight of the upper portion of the body is increased, must be borne in mind."

This description shows clearly the differences which exist between this form of contraction, and the well-known rachitic deformity with which the profession is already familiar.

The description which follows of the mechanism of labour in contracted pelves is of extreme value, for not only should these deviations and irregularities call attention to the possibility of contraction, but should of themselves, in most cases, suggest the particular form by which they are produced. As we have confined ourselves to the flattened, non-rachitic pelvis, on account of the great frequency with which it occurs, we will complete the picture as given by Schroeder by pointing out the peculiarities which characterize the mechanism of labour in these cases.

"We have seen in the study of normal labour, that, the resistance to the descent of the forehead and occiput being equal, the latter which lies nearest to the propelling force must of necessity first enter the pelvic cavity; if, however, the antero-posterior diameter of the pelvis is diminished, an obstacle will be presented to the entrance of the head, which will be most marked at the point of contraction. This resistance is much nearer the occiput than the forehead, so that, in spite of its being at the end of the longest arm of the lever, the forehead will become the lowest point. As soon, however, as the chin has departed from the breast, the line of the direction of the expulsive force, represented by the vertebral column, falls nearer the forehead, and the anterior arm of the lever becomes the shortest, hence, as the resistance to the descent of the occiput has increased, and as it has now become the relatively or absolutely longer arm of the lever, the forehead must descend still lower.

"In the simple flattened pelvis, therefore, the head enters the pelvic cavity with the forehead lower than the occiput, or, in other words, as the presenting part, and, as soon as the labour-pains have fixed the head in the superior strait, the sagittal suture is found to run nearly transversely, or only slightly obliquely, and is in the neighbourhood of the sacrum, the anterior fontanelle being not far from the promontory, in the first position rather to the right, in the second position rather to the left of it. The biparietal diameter of the child's head, therefore, no longer occupies the contracted conjugate, but the smaller and more compressible bi-temporal. In this manner, the sagittal suture running transversely, and the anterior fontanelle low down, the head passes into the pelvis. As soon as the contracted conjugate is passed, the presenting forehead finds increased resistance in the pelvis, and the occiput now descends, the posterior fontanelle being easily reached by the examining finger, and becoming eventually lower than the anterior fontanelle. If the preponderating resistance of the posterior pelvic wall over the anterior is felt when the large fontanelle is the presenting part, it turns anteriorly, and later in the process again rotates posteriorly, while, if both fontanelles are on about the same plane, the transverse position of the head is maintained for a long time, the posterior fontanelle turning anteriorly only when it is deeply engaged in the pelvis. The remaining steps in the mechanism of labour proceed as usual, for the diameters of the outlet are normal."

In the treatment of cases when the increased resistance and difficulties to be overcome only excite increased uterine action, no operative interference is necessary, but if the contraction is marked, or if the condition of the mother or child demands the early termination of the labour, version by the feet is the means by which the interests of both are best secured. The restriction which the author lays down to the use of the forceps will seem to many too absolute, and we fear that many an infant life will be sacrificed to craniotomy, which a judicious use of a conservative instrument would have saved.

"So long as the head is not so firmly impacted but that the hand, after a free use of chloroform, can pass by it, version is indicated. If this is not possible a *master in the art* MAY apply the forceps, and by regular though powerful traction efforts attempt to deliver the head, which is arrested in the contracted portion of the pelvis; for if he is not successful he will know when to lay aside the instrument; but the beginner, if the head does not follow his traction, will only exert more and more force, while the dread of failure makes the sweat roll from his brow, so that finally the forceps, which should be a conservative instrument, is converted into a most dangerous implement. The forceps must not be used, then, in narrow pelves until the obstacle has been entirely or almost entirely overcome. In most cases of this sort nature alone will then be able to complete the expulsion; but in exceptional cases it happens that the natural forces will become exhausted in overcoming the obstacle, and that the head remains a long time impacted in the pelvic cavity. Then the forceps are in place, then they are a harmless, conservative instrument; but then they are employed not on account of the contracted pelvis, but on account of uterine inertia. If the head has not yet passed the superior strait, while the condition of the mother imperatively demands the completion of the labour, there remains only the sad alternative of allowing both mother and child to perish, or, in order at least to save the mother, to shorten by interference the life of the child, which is in such cases always lost; in other words, to perforate the head of the living child. If benefit to the mother is expected from this operation, it must not be delayed until she is in such a condition that the completion of the labour is no longer of any advantage to her, but it must be performed at such an early stage in the labour that the prognosis for the mother is favourable. It is one of the most difficult tasks of the accoucheur to determine correctly the moment when, on the one hand, there is a fair chance of preserving the life of the mother, and, on the other, to avoid destroying a child's life which might have been preserved."

This giving up of all effort to save the child by forced traction, which may jeopardize its life, and resorting at once to craniotomy, by which the life of the child is certainly lost, is not a step forwards; it recalls the teaching of the old Dublin school, when all attempts to deliver by the forceps were substituted by delay and a final resort to craniotomy, with this difference, that in the Dublin school all operative interference was deferred until the mother, as well as the child, was sacrificed, while if the teachings of Schroeder are followed, the life of the mother will almost certainly be saved at the expense of the offspring.

In the chapter on puerperal fever the author has grouped together a series of morbid phenomena, "which are characterized in part by their acute pernicious course, in part by their tendency, at least, towards such a course, and by their owing their existence to a common cause," and has developed a picture which is unrivalled for the clearness and accuracy with which the pathological anatomy, clinical history, and treatment of this dreaded accident of the lying-in room are described. Under the term "puerperal fever," all those diseases of lying-in women are included which follow and are produced by the absorption of septic material, that is of organic matter in a state of decomposition. In all probability this material is never, or at all events rarely, absorbed through the skin or a mucous membrane which is intact, a fresh wound or raw surface being necessary in order to render absorption possible. This infection may take place either from the mother herself or from external sources. In the first case the septic matter may be furnished either by the decomposition, or breaking-down of a new growth, such as carcinoma of the cervix, or from a sloughing wound of the maternal parts, or from the decomposition of a partially retained placenta or membranes. Great stress is laid on the possibility of infection by means of the examining finger, instruments, sponges, etc., and many illustrative cases are cited. The term *contagious* cannot, strictly speaking, be applied to puerperal fever, for by this we mean those diseases in which a *specific* poison is generated in the affected organism, which, when transferred to other individuals, produces in turn the same specific disease in every case; for instance, measles, scarlet fever, smallpox, syphilis, etc. The secretions of puerperal fever patients will, it is true, if brought in contact with other lying-in women, generate puerperal fever, but these secretions have nothing specific in themselves, originating as they do, wherever organic matter is in a state of putrefaction, and producing phlegmonous erysipelas and septicæmia in surgical patients just as certainly as they do puerperal fever in lying-in women. Although, therefore, puerperal fever cannot be called contagious, in the strictest sense of the word, still the fact that it may be, and is, communicated by the examining finger, must not be lost sight of.

While it cannot be denied that absorption may take place at the placental site, still, in point of fact, this seldom occurs, for the infectious matter is rarely brought in contact with this point. The slight lacerations which always take place in the cervix, and the almost never-failing abrasions and superficial tears in the mucous membrane caused by the passage of the child's head through the vagina and vulvar outlet, are, however, the principal sources through which the septic material is absorbed, for with these parts the examining finger of the accoucheur is brought in frequent contact. The question of the ætiology and pathological anatomy of the disease is fully discussed, and the views of Virchow, Buhl, Recklinghausen, Bergmann, and others, are presented in detail, and subjected to a critical examination. The importance of this subject makes it impossible to abstract this portion of the work without exceeding the limits of a review; and we have the less reluctance in abandoning this task because an English translation, the work of a thorough student of German obstetrical literature, will soon be laid before the medical profession of this country, and an opportunity be thus afforded of comparing in a compact and condensed form the views of the most prominent writers on these vital questions.

It is in no spirit of exaggeration or indiscriminate praise, that we venture to say, that the appearance of this book in an English form will exert a powerful influence on the practice of obstetrics in this country. For the first time the physiology and pathology of the process of gestation and parturition will be presented in a new and simple form, viz., as manifestations of the same laws which govern vital action in other parts of the body, modified only by the peculiar character of the organ in which these processes take place. Time-worn, hereditary descriptions, copied from one author to another, traditions of the lying-in room which have so long checked and retarded the spirit of advance, will not be found, but, in their place, a healthy spirit of investigation and original research which has given vigor to the style and freshness to the matter of the book. The spirit in which it is written is evident on every page; its object is not by vague and general statements to present the science of obstetrics as a perfect whole, but, rather, by pointing out the gaps and imperfections, and by suggesting special subjects of investigation, to interest and stimulate the student, so that he too, in time, shall bring forth good fruit, and add something to the development of the unity of the science. W. F. J.

---

ART. XXI.—*The Physiological and Therapeutical Action of the Bromide of Potassium and Bromide of Ammonium.* In two Parts. By EDWARD H. CLARKE, M.D., and ROBERT AMORY, M.D. 16mo. pp. 178. Boston: James Campbell, 1872.

THE little volume before us is of more than ordinary value. The attention of the profession has, for some years past, been very much directed towards the drugs herein considered. Unlike most of the new-found panaceas and specifics enthusiastically vaunted by men of unphilosophic minds, the bromides do not depend for evidence of therapeutic worth upon the limited experience of a few doubtfully qualified observers. Neither have we been asked to prescribe them on purely theoretical grounds, in the presence of which facts have been ignored or perverted. Clinically their merits have been tested and affirmed by many of the most distinguished and scientific physicians of England, France, Germany, and America. In one respect, indeed, they possess an exceptional interest and an extraordinary importance. Not only is there abundance of the best testimony to their value in many diseases and for many purposes where they compete with other drugs, but also to a peculiar and almost specific efficacy in the treatment of epilepsy. The experience of scores of leading physicians, and that of hundreds unknown to fame, has demonstrated that these salts exercise a controlling influence over that most terrible and hitherto most hopeless of maladies. When, moreover, we add the consideration that, in most cases, their therapeutic uses are suggested, explained, or supported, by the results of physiological experiment, we cannot fail to acknowledge the great importance of special and scientific investigations into the action of the bromides in health and disease.

The fact, too, that nervous diseases seem to be peculiarly the scourge of our times, notoriously difficult of treatment, and often foiling our best efforts towards cure, should lead us warmly to welcome additional proofs of the trusty temper of the new weapon offered to our hand. Had the hundreds of salts and simples that stuff the bursting covers of our dispensatory been tested by the best modern methods, their number would have been vastly and most mercifully diminished.

The experiments of Dr. Amory, illustrating the physiological effects of the bromides on men and lower animals, appear to have been made with much care. His statements of them, though generally clear, concise, and adequate, are yet, in several instances, rather lacking in grammatical correctness and in precision of language.

Solutions of bromide of potassium are found to be rapidly absorbed by the mucous membranes of the mouth, stomach, and rectum. A few experiments to test the practicability of introducing the salt through the skin, by means of baths, reveal the curious fact that, while a small amount may be thus introduced into the circulation from a cold solution—70° or 72°—absolutely none is absorbed from a hot one—96° to 108°. Dr. Amory observes that this experiment illustrates and confirms the proposition of Dr. Stillé, that in a warm bath the body exhales, while in a cold one it imbibes.

The secretions of the salivary glands and of the mucous membranes are found to be generally diminished, under the use of bromide of potassium. During the first day or two, however, they may be slightly augmented. Under continuous exhibition of the drug there is usually dryness of the throat and pulmonary mucous membrane, and a tendency to constipation. It seems difficult to establish any decided change in the amount of urine excreted.

While absorption of bromide of potassium by the mucous membranes is very rapid, its elimination is somewhat more gradual. It may very soon be detected in the saliva, even after due care in cleansing the mouth. As this secretion, however, is mostly swallowed and reabsorbed, it can hardly, as Dr. Amory justly remarks, be said to aid in elimination. A very small amount of the salt may be found in the perspiration. Practically, however, the kidneys may be considered almost the sole gate of exit for this drug. Several careful attempts to detect it in the fæces entirely failed. Dr. Amory is convinced that the bromide undergoes no change or decomposition while in the system, but comes out precisely as it went in.

To ascertain the effect of the bromide of potassium on the capillary circulation, a solution was applied to the web of a frog's foot, while the circulation in another foot of the same frog was observed under the microscope. After a few moments of excitement, the circulation became less rapid, the arterioles diminished in size, and the blood in arterioles, capillaries, and venules was scanty. Here follows a sentence which is not very happily expressed: "Half an hour or more after this, when the animal has become calm, the blood returns to the capillary system in rather larger amounts than before; and in a little while the constriction or tetanus of the arterioles is noticed, which continues some time." To what period do the words "than before" refer? Is it meant that the amount of blood present is greater than before applying the solution, or than at some moment during the observation? "The blood," it is immediately added, "in the venules diminishes and approaches more to the colour of that in the arterioles. If the muscular tissue be now observed without the aid of a lens, it will be found to be pale and exsanguine, which is due to this modification in the supply of blood to the capillary system." The writer goes on to mention, that Voisin has remarked upon the pallid skin of patients under continued use of the bromide; and quotes, without dissent, Meuriot, as follows: "The bromide of potassium exaggerates the arterial tonicity, tetanizes the arterioles, slackens or arrests the circulation, and produces an oligæmia of the tissues."

It has been proved, Dr. Amory tells us, that "upon frogs the sedative action of this drug is upon the vaso-motory system." To support this opinion, one of the curious experiments of Dr. Lewisky is quoted, in which two frogs, one in a normal condition, and the other under the influence of bromide of potassium, suffer precisely similar amputations of the toes, with the result that, while from the stumps of the healthy animal there exuded, in a given time, eight or nine drops of blood, his poisoned brother shed but two. This experiment, often repeated, and under the fairest conditions, is justly regarded by our writer as proving the same sedative effect on the vaso-motor nerves as was shown by his own different experiment. Dr. Amory believes that the effect of the salt on the vaso-motor system is the primary one; the general nervous sedation being secondary to, and dependent on, the stimulation of the vaso-motory nerves.

Another experiment upon a frog, made by Dr. Amory with the utmost attention to every detail necessary to make the trial perfectly fair, seemed to indicate that bromide of potassium, directly applied to a nerve, destroyed the galvanic excitability of that nerve. Yet, he candidly adds, the conclusion was not confirmed by subsequent experiments on dogs and rabbits.

After stating and comparing the somewhat diverse views set forth by different writers as the legitimate results of experiments, concerning the exact manner in which the nervous system is affected by the bromides, Dr. Amory gives his own views of the order of phenomena. Stimulation of the vaso-motor nerves causes diminution of blood in the capillaries, and, consequently, lowered sensibility in the peripheral extremities of the nerves of sensation. This in turn, acting in conjunction with a correspondent anæmia and lessened sensibility of the nervous centres, causes diminution of reflex activity. However strongly we may be inclined to accept this explanation of the phenomena, the experiments adduced in its support do not seem so conclusive as we could wish.

From some twenty experiments upon the action of the bromide of ammonium, Dr. Amory is led to believe it almost identical with that of the other salt.

We cannot take leave of this division of the book without reiterating a belief in the very great value of this class of researches. Upon such the medical practice of the future may probably be largely founded. This branch of study, moreover, opens a wide field for useful and honourable labour to the ambitious student and to the graduate still unburdened with business. We are glad to see that Harvard University has created a lectureship expressly for its cultivation, and has placed Dr. Amory in the position.

The portion of the volume prepared by Dr. E. H. Clarke, while it cannot fail to obtain general appreciation, will yet be especially valued by those readers who know the character and ability of the writer. Men who have listened to his lectures, or enjoyed his less formal instruction in the "Summer school" of a dozen years ago, will place great trust in the good sense, discrimination, and perfect honesty of his observations.

Dr. Clarke begins by stating that the therapeutic value of the bromides is to be established solely by clinical observation. Correct knowledge, however, of its physiological action is, he adds, the only safe guide to its employment in disease; though we must not forget that the action of a drug given during a pathological state does not always precisely correspond to that observed in health. With this particular group of remedies, however, the difference between physiological and therapeutic activity seems to be less than is the case with most efficient medicines.

In regard to promoting absorption of the bromides by the mucous membranes, one or two practical hints are given. The dose should not be exhibited with meals or during digestion, since the acids at such times present in the stomach might decompose the salt, and set free the highly irritant bromine. Given when the stomach is at rest, and consequently neutral, it is absorbed unchanged and without causing irritation. Still further to guard against decomposition through accidental or morbid acidity of the stomach, Brown-Séquard and some others add to their prescriptions a carbonate of soda or ammonia. That absorption may be prompt and complete, Dr. Clarke counsels the use of a very weak solution —not more than eight grains to the ounce. In cases where inflammatory or degenerative disease of the stomach indicates the advisability of administering by the rectum, the solution should be cold, and not stronger than ten grains to the ounce. Observing these conditions, the action of the drugs may be fully obtained by rectal injections.

Dr. Clarke directs attention to the fact that the absorption of these salts is very rapid, while elimination, though at once begun, is comparatively slow. Hence in continuous administration there is a tendency to accumulation in the blood. The greater part of a single dose is excreted in eight or ten hours; but some portion remains for days. While, on the one hand, if it be desired to keep a large amount of the salt constantly in the blood, the doses must be never wholly suspended, yet, on the other hand, if more be continuously given than can be eliminated, it must accumulate to an unnecessary and perhaps injurious extent. We are disposed to believe that the unpleasant and sometimes alarming symptoms known as *bromism* indicate always a needless saturation of the blood. We believe the doses should be restricted or diminished in proportion as the system appears to be pervaded with the drug.

The sleep-procuring action of the bromides is well described. It seems to correspond with, and confirm, the generally received doctrine, that natural sleep is dependent on moderate cerebral anæmia. When the brain had been actively exercised—short of exhaustion—Dr. Clarke found that thirty or forty grains of bromide of potassium caused the refreshing sleep which otherwise would have been long delayed. The same, taken when the brain was neither excited nor exhausted, simply made the slumbers unusually profound. Taken, however, when, by protracted and exhausting labour or long watching, the cerebral circulation had become already too low, the dose procured tranquillity, but not sleep. In none of these circumstances could any ill effects be detected the next day. Assuming that, ordinarily, wakefulness is due to superabundant, and exceptionally to deficient, circulation of arterial blood in the brain, Dr. Clarke finds that the hypnotic action of the bromides agrees with the ideas derived from physiological experiment, as to their effect in producing contraction of the arterioles. In the exceptional cases, where vigilance is due to deficient circulation of arterial blood in the brain, he considers a cup of beef-tea, or a stimulant, as the best possible hypnotic.

In giving the bromide of potassium to procure sleep, it is remarked that two small doses during the day, and one tolerably full dose at night, are usually much more effective than the total amount given at once. Experience has also taught, that though sleep might not follow a single dose, or one day's dosing, yet it will often be obtained by a few days' perseverance. Dr. Clarke has not found that the use of the bromides to procure sleep is productive of troublesome drowsiness in the daytime. As might be expected, these salts are not so much adapted to relieve the acute pain of inflammation, as to allay restlessness, excitement, and reflex irritability.

Dr. Clarke's experience confirms Dr. Da Costa's as to the fact that a preliminary dose of bromide of potassium increases the efficiency of an opiate, while it lessens the reaction.

The peculiar and somewhat alarming train of symptoms which often follows the protracted use of the bromides in full doses is quite fully described. We need hardly dwell upon this portion of the essay, further than to reiterate the opinion that the salts should not be given in such a way as to produce, or, at all events, maintain, such grave constitutional disturbance. If, however, any one think otherwise, there is consolation in the unvarying and universal testimony of all writers on the subject, including Dr. Clarke, that all ill effects will surely and speedily disappear upon omitting the medicine. Still, in the face of this strong evidence, before by the deliberate continuance of treatment reducing a patient to the depths of physical and mental impotence, we should hesitate long.

Dr. Clarke, in a hint worthy of notice, reminds us that most of the experiments on physiological action of the bromides have been made with single or only intermittent doses; while in practice we often keep the blood constantly loaded with the drug. With the single or sleep-procuring dose, the physiological experiments come in close relation. With the prolonged exhibition, the relation of the experiments is much less near, and too exact correspondence should not be counted upon. It would seem worth while to institute a new series of observations upon the physiological effects of continued doses.

The cases and observations of the essayist support the idea that, in some way, the bromides diminish reflex activity. The precise manner in which they act, the exact order or sequence of the different steps, is not easy to be determined. Whether the primary action is upon the peripheral nerves, soothing and removing morbid irritability, and thereby secondarily tranquilizing the centres, or whether the converse order is the true one, or whether finally, back of all other phenomena, the effect be produced by specific influence of the drugs on that nerve-system (probably sympathetic) which controls the muscular coats of the arteries, stimulating these to contraction, we shall not attempt to decide. Nor do we find that Dr. Clarke assumes to be absolutely exact in stating the *modus operandi*. It is certain, however, that many morbid conditions, dependent on the over-excitability of various reflex functions, are wonderfully controlled by the bromides. It is needless to enumerate all the different diseases and symptoms whose removal, well attested by Dr. Clarke and other trustworthy observers, seems to depend upon this property of these salts. Wherever diseased manifestations appear to be due to excessive reflex activity, without palpable eccentric cause, these remedies may be given with great hope of relief.

In the essay before us, and in many other writings, reference is made to a special influence of a soothing or even anæsthetic nature, exercised by the bromides upon the mucous membranes. Where hyperæsthesia exists, as in irritable bladder or urethra, irritative cough, tickling in the throat, etc., the salts may prove extremely useful.

Dr. Clarke adds his testimony to that of many others as to the general anodyne and soothing efficacy of the bromides. He attributes their therapeutic value in all cases to diminished circulation of blood in the brain and spinal cord.

As to the use of the bromides in epilepsy, Dr. Clarke modestly premises that his own experience has not been large. Of twelve cases which he has recorded, treated by the bromides, three have had no fits for many years, three none for a year past, and two were not benefited.

We had intended, in beginning this notice, to consider at some length the treatment of epilepsy by the bromidal salts. No other application of them has seemed to give such immensely valuable results. The terrible disease, heretofore almost wholly irresponsive to medicine, seems to respond wonderfully to the new treatment. But in studying the disease and the remedy, the character of one and the mode of action of the other, we find so many exceptional and contradictory phenomena, so many apparent difficulties and inconsistencies, which cannot be ignored, but which properly to discuss would require much time and space, that we are compelled to refrain from anything more than a passing glance.

One question is so sure to arise in the mind of one who compares the known action of the bromides on the bloodvessels with the very generally received idea that cerebral anæmia is the immediate cause or condition of the epileptic paroxysm, that we must at least hint at a possible answer. "If the paroxysm depend on instantaneous cerebral anæmia, how is it prevented by giving drugs that have a known tendency to constrict the vessels, and produce to a certain extent the very condition that makes the mischief?" To this it may be replied, that the action during an actual paroxysm may not be remedial. The period of anæmia lasts but an instant, and is followed by great vascular engorgement, due to arrest of respiration and to muscular action. So, from momentary deprivation of blood, the cerebral condition changes to one of congestion, and that with poorly aerated blood. Repeated paroxysms, always ending in great and prolonged venous congestion in the nervous centres, may reasonably be supposed to produce at last a lax and toneless condition in the often distended capillaries and arterioles, as well as in the veins. Now is it not in consonance with known laws, that the loss of their natural tonicity and elasticity should predispose these vessels to spasmodic and abnormal efforts to contract? If this be so, the bromides, by restoring tone to the weakened vessels, would promote healthful regularity and diminish the tendency to spasm. Moreover, the restoration of tone to the minute vessels would inevitably tend to improve the nutrition of the centres, which must suffer from the comparative stagnation and venous character of the blood in dilated capillaries. Centres well nourished are less prone to morbid function. It is the quickly moving, oft-renewed, well-aerated blood, coursing through elastic channels; not the dark fluid, half-stagnant in lifeless bags, that makes healthy growth and action. That dilatation of the bloodvessels of the medulla oblongata is generally found upon examination of old epileptics, is the belief of Schroeder van der Kolk and others. This condition is noticed also by some distinguished observers, who attribute epilepsy not to cerebral anæmia, but to hyperæmia of the medulla oblongata.

In connection with some remarks on the value of the bromides in hysteria, not in checking a particular attack, but in modifying the peculiar excitability which lies behind the more striking manifestations, the suggestion is made that perhaps we ought not to speak of these medicines as curing either hysteria or epilepsy. Their action is rather to be regarded as analogous to that of splints upon a fractured limb, securing rest, during which nutrition and repair can go on uninterrupted. This naturally leads to the practical corollary that, during the precious hours of respite from convulsions, the wise physician will do all things possible to improve the health and vigour of his patient, by regulating and strengthening all the natural functions. Not only is tonic treatment indicated on general principles, but it tends to prevent the development of the unpleasant results called "bromism." Great stress is laid upon the necessity, in epilepsy, of keeping the system constantly and pretty uniformly under the influence of the remedy. Relapse, after long freedom from convulsion, often follows omission or too sudden diminution of the dose. A chronic disease requires chronic treatment.

Dr. Clarke quotes from this *Journal* (Oct. 1870, p. 420), a remarkable case of poisoning by strychnia, in which bromide of potassium seemed to act as a veritable antidote. He regards the two drugs as diametrically opposed in their respective action on the medulla.

As to the relative therapeutic merits of the different bromides in use, the general impression seems to be that there is very little choice. One will sometimes procure sleep, when another, especially after repeated use, has failed. Dr. Clarke, however, fully confirms Brown-Séquard in regard to the greater efficacy of a combination of the potassium and ammonium salts, over either alone. There is said, also, to be less danger of "bromism" when the two are given together. The lithium salt is very costly, but is reported by some good observers to be more effective than the others, both as a hypnotic and for the relief of epilepsy. Bromide of sodium is somewhat variously estimated, but claims no advantage over the others. Dr. Hammond, of New York, thinks bromide of calcium superior as a hypnotic, and especially useful in the convulsions of children. Dr. N. H. Norris, of Wisconsin, believes the bromide of iron to be almost a specific for seminal emissions and kindred troubles, as well as a powerful hypnotic, and a valuable tonic.

We have not thought it advisable to attempt to name every disease in which the bromides have been recommended. A glance over the journals and compends shows the number to be enormous. In the essay before us, the aim seems to be rather to point out the principles on which the salts act, and to give practical hints respecting their employment, than to specify every malady in which they have been given. Dr. Clarke's monograph strengthens our belief, that in this group of salts should be recognized one of the few really valuable additions made to our list of remedies during the present century.

The volume is very neatly printed on tinted paper. It has a table of contents, a good index, and a list of the works and authors consulted. The matter of each essay is well arranged, while that of Dr. Amory is preceded by a brief analytical statement of the points to be made. Fault might be found with the order of the two parts, since as here printed the clinical and therapeutic precedes the physiological portion, in opposition to the natural sequence. In point of fact, too, the physiological essay was written, and elsewhere published, a year or two before the other. We suspect that the explanation of this arrangement is to be found in Dr. Amory's graceful deference towards his senior. B. L. R.

# ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

Art. XXII.—*Autumnal Catarrh* (*Hay Fever*). With three Maps. By Morrill Wyman, M.D., Late Hersey Professor Adjunct of the Theory and Practice of Medicine in Harvard University. 8vo. pp. 173. New York: Hurd & Houghton, 1872.

Dr. Wyman, who has evidently devoted much time to the study of his subject, is convinced that in this country two separate and distinct forms of annually recurring disease are confounded under the name of "hay fever." One of these, known as the "rose cold" or "June cold," generally commences early in the summer and continues until the first week in July. This corresponds, he says, in most of its symptoms and in the time of attack with that popularly known in England as the "hay fever" or "hay asthma"; but that the two diseases are not completely identical, appears from the fact that individuals who have suffered here with "rose cold" have entirely escaped any similar disease during summers which they have spent in England or on the continent.

The other form occurs in autumn, and has received very little attention from medical writers. Although himself a sufferer from it, and therefore interested in looking up the literature of the disease, the author has not been able to meet with a description of it earlier than his own in 1854, when he described it in his course of lectures in the medical school of Harvard University; his knowledge of it having been gained, partly from his experience of it in his own person, and partly from observation of the few cases which had at that time come under his care for treatment. In May, 1866, he embodied the facts then known to him in a paper which he read before the Massachusetts Medical Society at its annual meeting in Boston. Since then he has had more frequent opportunities for examining the subjects of the disease, and has availed himself, whenever this was possible, of the experience of other physicians. To render the histories of the cases, which are appended to the volume, as accurate as possible, they were written and corrected in the presence of the patients; in many instances the words used by them being given, in order to disabuse the reader of the impression that the author has allowed his own views as to the nature and course of the disease to have an undue influence upon him.

Dr. Wyman proposes to give to the disease which he describes the name of autumnal catarrh. This name he prefers to those in general use, because it is in conformity with the nomenclature of Dr. Bostock, who it will be recollected called the "June cold" *Catarrhus Æstivus*,[1] and because it involves no theory as to its cause, of which very little is known. He uses the term catarrh to indicate "a condition of the mucous membrane, accompanied by a flow of a thin secretion, not necessarily implying inflammation," while the word autumnal designates with sufficient distinctness the season of the year at which it takes place. The popular names of "hay fever" and "hay asthma" are inappropriate as indicating the disease under consideration, simply for the reasons that in most of the regions where it occurs, the hay has been cut and gathered in long before its appearance, and that "it is only in exceptional cases that the smell or dust of hay, any more than any other dust, produces uncomfortable sensations in the subjects of this disease." Asthma, although a frequent attendant upon the disease, is not a necessary accompaniment of it, and is rarely so prominent as some of the other symptoms.

---

[1] Medico-Chirurgical Transactions, vol. x. and vol. xiv.

We are sorry that want of space will not allow us to reproduce in full the admirable outlines of this disease which Dr. Wyman has traced for us; we shall endeavour however, as briefly as possible, to lay before our readers a sketch of its principal characteristics. In the first place, nothing connected with it is more remarkable than the regularity with which, in the majority of cases, its first symptoms are observed every year about the 20th of August, and even it is said in some instances at the same hour of the day. A slight itching in the palate and in the parts connected with the throat generally first reminds the sufferer that the time for his annual attack has arrived. In a few cases, however, the symptoms are preceded by evidence of constitutional disturbance. In a day or two there is superadded an irritation of the lining membrane of the nostrils, which gives rise to a sense of obstruction, and to attacks of sneezing occurring in paroxysms, and at first only in the morning. These attacks are generally relieved by active exercise, or by whatever else diverts the blood from the head. Later, there is a discharge from the nostrils of a limpid fluid almost free from mucus. It is occasionally so abundant that when the head is inclined forwards it will run out of the "nose like water from a pitcher almost." This is accompanied by watering of the eyes and itching of the eyelids, causing the patient to rub his eyes violently, which gives rise to intense congestion. Subsequently, the eyelids are observed to be swollen and to be the seat of an eruption of pustules or sties, which are most numerous along the line of insertion of the eyelashes. The sense of smell and of taste are much impaired, and in some cases almost abolished; at times there is partial deafness and a sense of obstruction of the internal ear. Deglutition is interfered with, especially when the nostrils are obstructed. The mucous membrane of the mouth, tonsils, and pharynx partakes of the general irritation; the lips are dry, cracked, and swollen. There is frequently to be observed a papular eruption, especially in the scalp, which is attended by more or less itching. Towards the close of the second week irritation of the bronchial mucous membrane is added to the other symptoms, giving rise to a frequent dry cough. After a paroxysm of coughing a small quantity of glairy mucus may be expectorated with slight relief to the disagreeable sensations in the throat. At this stage asthmatic symptoms occasionally appear, these, although sometimes severe, are generally not long continued.

At the end of the third week, the catarrhal symptoms diminish, the tickling of the fauces ceases, the condition of the eyes improves, but the cough is apt to continue longer, while the heart's action will be noticed to be easily accelerated by exercise, and the pulse occasionally to intermit. The symptoms then gradually diminish until the occurrence of the first frost, when they generally abruptly disappear, leaving behind them debility and a more or less altered state of the mucous membrane, from which the patient, if in otherwise good health, soon recovers. Together with these local effects of the disease, there is generally present a profound nervous depression, rendering impossible any kind of mental work, especially in the latter part of the day. This is attended by great nervousness at night, and inability to sleep, which, together with irritability by day, is an annoying feature of the affection. In severe cases there is a daily paroxysm of fever, accompanied by headache, intolerance of light, and by debility compelling the patient to keep his room and even his bed for several days in succession. The tendency to this annually recurring affection of the mucous membrane is at length to cause chronic bronchitis, which may in the end undermine the patient's strength.

These are symptoms which do not differ, except in the time of their occurrence and in the fact that they are not relieved at the sea-coast, from those which are said by Dr. Watson to attend the rose cold in England. We are therefore inclined to think that Dr. Wyman has not succeeded in establishing autumnal catarrh as a distinct disease, although he has certainly drawn our attention to the fact of the very general existence in this country of a disease similar in nature to the rose cold, although its symptoms are generally more severe; showing the same tendency to occur in families and alike rebellious to medicinal treatment. He has also shown that there is a period of summer, from July 10th to August 20th, when there is no tendency to the occurrence of this form of catarrh.

Dr. Wyman next proceeds to demonstrate that the disease does not occur in Great Britain, France, Switzerland, or Germany, and that there are many parts of the United States which are exempt from it. "As at present informed," he says, "we may assume that it is a disease of temperate climates. It does not extend much beyond the shores of the great lakes, certainly not into the cold regions of Canada. Neither is it found in the Southern States; that is, it is confined between the parallels of 37° and 47° north latitudes. But it does not occupy the whole of this region; it is not found in the extreme east of the continent, nor does it extend to the far west." He states that the southern limit probably extends from St. Louis eastward to the capes of Virginia; the Editor of this Journal, however, informs us of a lady and her niece, residents of Savannah, both of whom have suffered from the disease, the former in April, the latter in August.[1] To the sufferers from this disease it will be a gratifi-

---

[[1] A very curious circumstance may be mentioned in connection with the former case. When suffering from her annual attack, some years ago, she was invited to visit a friend in New York, but postponed accepting the invitation until her recovery. A few days after her arrival in New York, which was about the 1st of June, the roses there began to bloom, and she had a second attack.

We may further state that two sisters of the second case, married and living in Philadelphia, are sufferers from this affection. The elder has not escaped her August attack for the past thirty-two years, and for the first nine years she was also afflicted with a June attack.

The younger, who suffers from the June affection, has escaped only once in the past twenty years, and on that occasion she was confined to her chamber, and most of the time to her bed, by a violent attack of acute rheumatism. The first time she left her chamber was to obtain some water in an adjoining bath room, when she at once began to sneeze, her eyes to water, and she believed her enemy had seized her. On raising her head she observed on a high window-ledge a number of roses in a tumbler. She at once made a hasty retreat and did not leave her room until July. Whenever this lady smells a rose, watery eyes, sneezing, etc., result; but her sister enjoys much the odour of roses and of new-cut hay, and experiences not the least unpleasant effects therefrom.

From the closest observation of the disease at the two seasons, we have not been able to detect any *essential* difference between them—certainly no greater difference than occurs in the same individual in different attacks, or in different individuals affected at the same season, and we are therefore persuaded that the periodical affections termed rose cold and hay asthma are really identical affections, and that the cause which produces them, whatever it may be, though not precisely the same in every individual, must be of a closely analogous character. Editor.]

cation to know that in the region of country exempted from all tendency to this disease are included those parts of the White Mountains in which are situated the Glen, Gorham, Randolph, Jefferson Hill, Whitefield, Bethlehem Village, the Franconia Notch, the White Mountain Notch, and the various mountains within this line. The Catskill Mountains also afford immunity to many, as do also Oakland, in Maryland, and many places of resort in the Green Mountains and in the Adirondacks. All of these places are elevated some hundred feet above the level of the ocean, but mere elevation is not alone sufficient to give protection, as those who have resorted during attacks to the Berkshire Hills of Massachusetts and the elevated plateaus of New York have discovered. This immunity also cannot be explained by the lower temperatures of the places where relief is experienced, for in the case of the White Mountains the temperature is almost identical with that of the homes of some of those who obtain relief there. By residence in this region of immunity, during the time in which autumnal catarrh usually manifests itself, those subject to it escape, and even those fully under the influence of the malady, on arriving, experience sudden and marked relief.

In regard to the causes of autumnal catarrh little appears to be accurately known. From Dr. Wyman's investigations it appears, that, of seventy-nine patients whose histories he was able to collect, fifty-four were men and twenty-five were women; but that this greater liability of the former does not depend simply upon the greater frequency with which they are exposed to the vicissitudes of weather, is shown by the fact that in six cases only out of the fifty-four would the nature of the occupation or profession of the patient justify the opinion that it had had anything to do with predisposing him to the disease. It appears to belong to the early and middle period of life. Thus, of seventy-nine cases in which the age is given, it is said to have begun in fifty-nine before the patient had reached forty years of age, and in only two after he had passed fifty. There is, as has already been intimated, a marked predisposition in certain families to this disease, as the following will show. "Of seventy-seven cases recorded in our table, in fifteen (one-fifth) more than one member of the same family is also affected—a much larger proportion than exists in the community generally." In what this predisposition consists it is at present impossible to say. Those who are susceptible to its causes do not manifest at other seasons of the year a greater liability to ordinary colds than other persons. Indeed, they often boast that their annually recurring catarrh secures them from attacks of other diseases, and it is certain that it does not always prevent them from attaining an advanced age.

In regard to the pathology of the disease, the author says: "The suddenness with which the access commences, the violence and rapidity with which it invades different parts, the redness of the conjunctiva, the injection of its vessels, the profuse lachrymation, the itching, the irritation of the nostrils, copious secretion and sniffling, the irritative spasmodic cough, more like whooping-cough than bronchitis; the sudden spasmodic asthma, the itching of the skin, and the speedy disappearance of all these symptoms, without the usual signs of inflammation, certainly correspond better with what we know of derangements of the nervous system than with those of the mucous membrane, or the organs by which it is invested." He adds in a note that any one acquainted with the investigations of Claude Bernard upon the vaso-motor nerves will readily admit that a parallel might be drawn between the symptoms of autumnal catarrh and the effects of the experiments of this eminent pathologist on the great sympathetic. The view that the disease is essentially nervous in its origin is, we believe, generally held by pathologists, although "hay asthma" is, for the sake of convenience, almost universally discussed by systematic writers under the head of diseases of the respiratory organs.

The exciting causes of autumnal catarrh are numerous, among them may be mentioned dust and smoke, especially when caused by a railway train, the dust from straw and hay, strong light, as, for example, sunshine falling upon the face, high winds, fruit of various kinds, the stalks and flowers of potatoes, the perfume of flowers, etc. The very general impression that the Roman wormwood is the cause of the whole disease led the author to experiment with it. It flowers in the open air about the middle of August, or a little later, and continues to bloom until late in September; it is covered with a large quantity of a fine pollen, which is constantly shed during the flowering season, and which is capable of exciting a paroxysm in a very large number of persons. The plant also grows luxuriantly in regions where the disease occurs, and only sparingly in mountainous countries.

The experiments of Dr. Wyman show that the Roman wormwood is at least an active exciting cause of autumnal catarrh, and are as follows. Early in September, 1870, he gathered some of the plant in full flower and covered with pollen, and carried it to the White Mountain Glen, where it was kept until September 23d. The parcel was then opened and freely sniffed by himself and son, who, together with his uncle, Professor Jeffries Wyman, has the same predisposition as the author. The characteristic symptoms were produced in each case. The Professor, who, although of the party, did not sniff the plant, escaped entirely. A portion of the same plant was sent to a friend at the Waumbec House, Jefferson Hill, which seems to be a favourite resort of the sufferers from this disease, and the following is the account which he gives of its effects. "Eight persons sniffed the plant. One was seized with asthma and stricture in the chest, and did not entirely recover from the effects until the next day. This person is severely affected with asthma, and particularly sensitive. One was affected with catarrh, as he would have been at the same period at home, and the eyes were irritated for several hours; one had sneezing and coughing for some little time; two had sneezing only. One had sneezing and watering of the eyes; one had only irritation of the eyes for some time; one experienced no effects whatever; eight other persons were in the house at the time who are subjects of the disease, they did not sniff the plant, and were not similarly affected." Other experiments seem to prove that the plant has no special irritating properties, except during the autumn.

It is hardly necessary to discuss the diagnosis of autumnal catarrh. If the attack be fully formed, there is scarcely any danger of mistaking it for any other malady. The author says that the following questions answered affirmatively will usually determine the diagnosis.

1. Has the patient had several similar attacks?
2. Have they occurred annually at the critical period: August 15—September 25?
3. Have they ceased, or been relieved, by change of climate?

The disease is unfortunately very little under the influence of medicines, and a removal of the patient to a non-catarrhal region, which he should not leave until after the occurrence of frost, seems to be the only remedy which is successful at all its stages. Patients who are not able to go so far from home will find the city more comfortable than the country; they should avoid dust and the vicinity of plants known to produce a paroxysm, and sleep in rooms with closed windows so as to prevent currents of air. The application of a solution of quinia to the nostrils has not appeared to the author to be of any service, but the medicine may be administered with advantage internally in two grain doses twice daily. Arsenic, in the form of Fowler's solution, has also evidence in its favour. During the asthmatic stage, the smoking of stramonium leaves has been most successful, and so has that of the Espic cigarette.[1] The inhalation of sulphuric ether and chloroform give relief to some, but care should be taken not to render the patient insensible. Annoying symptoms may frequently be relieved by palliative measures, such as would naturally suggest themselves to any intelligent physician.

The histories of the cases with which the volume closes add very much to its value. These include descriptions of their own attacks by Daniel Webster and by the Rev. Henry Ward Beecher, both of whom have given very graphic accounts of their sufferings.

The book is an exceedingly valuable monograph, and we hope its appearance may be hailed as an evidence that hereafter American physicians intend to devote themselves more frequently than heretofore to the study and description of diseases which are either peculiar to our own country or are affected by its climate. We are sorry, however, that Dr. Wyman has not taken more pains in the composition; there are evidences of careless writing and proof reading, such as we should not have expected from one of his deservedly high reputation. Our notice is not complete if we do not add that the book contains three maps and a tabular view of eighty-one cases of autumnal catarrh.

J. H. H.

ART. XXIII.—*Thermic Fever or Sunstroke.* By H. C. WOOD, Jr., M.D., Professor of Medical Botany and Clinical Lecturer on Diseases of Nervous System in the University of Pennsylvania; Physician to the Philadelphia Hospital. The Dissertation to which was awarded the Boylston Prize, June 9, 1872. 16mo. pp. 128. Philadelphia: J. B. Lippincott & Co.

IN the preface, referring to his earlier published considerations of sunstroke, the author says: "The fact that my observations were rather derided in certain quarters, long since determined me to make at some time an experimental study of the subject. * * * * Claiming only that I have endeavoured to find the truth, and asking that my shortcomings may be pardoned, because my work has been honest in its intentions and desires."

The completeness Dr. Wood has given to his task will make his deriders as few and insignificant as his "shortcomings." So they may cease to "molest or make afraid."

The volume before us evidences that the award of the committee was based upon the thorough culture, clinical experience, and careful, laborious research—literary and experimental—which the author has employed in the fulfilment of his work.

The arrangement is into four parts: Part I.—Clinical History; Part II.—Nature; Part III.—Treatment; Part IV.—Sequelæ.

---

[1] The composition of each cigarette is as follows:—

| | | | |
|---|---|---|---|
| ℞. | Belladonna leaves | 4½ | grains. |
| | Hyoscyamus " | 2¼ | " |
| | Stramonium " | 2¼ | " |
| | Phellandrium aquaticum leaves | ¾ | " |
| | Opium | ⅕ | " |

It is Part II. about which will centre the chief interest of the profession. It is quite largely devoted to details of experimentation, some of which have demonstrated facts of paramount pathological importance.

The muscular system first attracted attention, from a prolonged study of which Dr. Wood arrives at the following conclusions:—

"1. Excessive rigidity of heart, due to a coagulation of its myosin, is a very pathognomonic lesion of sunstroke.

"2. That in most cases it is a post-mortem, rather than an ante-mortem phenomenon, occurring directly after death.

"3. In certain cases, the so-called cardiac variety of sunstroke, death is probably due to a sudden ante-mortem coagulation of the cardiac myosin, and, consequently, instantaneous arrest of the heart's action.

"4. That the muscles, after death from heat fever, very soon become rigid, sometimes do so instantly, and that such rigidity is of the same nature as ordinary post-mortem rigidity.

"5. That, while it is conceivably possible that death from asphyxia may occur from coagulation of the myosin of the diaphragm and other respiratory muscles, it is exceedingly probable that in man death never does actually occur from such cause."

His next inquiries were directed to the nerve-centres. A bladder was fitted over the brain of an animal, and a stream of hot water of known temperature passed through the bladder. At the height of the impression the temperature of the brain was ascertained by vivisection. The following was established:—

"First, A temperature of brain from 113° to 117° F. is sufficient, if maintained, to produce death in a short space of time, in mammals, by arrest of respiration.

"Second, That the chief symptoms induced are insensibility and convulsions, preceded by exceedingly rapid respirations and action of the heart, and unaccompanied by any general rise of temperature.

"Third, That these symptoms come on very quickly in all cases, at times with absolute abruptness."

He concludes, "That, if a temperature of 108° F. in the brain of a cat will produce these serious symptoms, it will induce no less in man."

The heat action upon nerve trunks was then tested "by exposing for several inches the sciatic nerve, passing underneath it a strip of rubber cloth, so as to isolate it from the muscles, and pouring water of a known temperature over it. At irregular intervals the conducting power of the nerve was tested by touching it with the poles of an induction battery above the heated portion." He found that the nerves would bear a heat above any occurring in sunstroke.

The results of nerve investigation are thus summed up: "That the nervous symptoms of sunstroke may be, and probably are, due to the direct action of the heat upon the cerebro-spinal axis, and that death itself by asphyxia is often brought about by the same influence."

Lastly, the question of blood-poisoning is disposed of by the fact that the blood of an animal dead from sunstroke has been injected into the veins of a living animal without injury; that the bright colour returns when shaken with oxygen, and "that at a temperature of 113° to 115°F. the amœboid movements of the white corpuscles become more active, and continue so for a greater or less length of time."

Notwithstanding these facts, there are many who will not accept them as final. Even the author occasionally leans back upon his old theory, in the vague expression of "blood deterioration."

As a diagnostic point, he lays stress upon a hot and *dry* state of the skin. The cause of this dryness is arrest of cutaneous transpiration. Cutaneous aeration has ceased, the sudoriferous excretions are retained in the blood, and must tend to destroy the vitality of that fluid. This is proved by the well-known experiments of Fourcault, Becquerel, and Breschet, where animals varnished over with impermeable coatings died—the blood presenting the same characteristics as that obtained in sunstroke. We have here death from "cutaneous asphyxia," as it is termed. Whatever technical objections may be urged, it is essentially a poisoning of the blood; and a disorganization of the plasma with destruction of corpuscular movements does not more necessarily follow than in blood poisoning from some extraneous agents. Granting in sunstroke that the heat action upon the peripheral nerve filaments arrests the cutaneous transpiratory process, yet it is the blood—thereby deoxydized, devitalized—which involves the nervous centres. An increase of body temperature above the normal can only supervene upon a disturbance of the natural chemical forces of the blood, unless the temperature of the surrounding atmosphere is equal to or beyond that of the body. It often happens in sunstroke that the temperature of the atmosphere is considerably below that of the body. It may well be inferred then that the access of body heat comes from chemical changes in the constitution of the blood; in other words, blood poisoning, secondarily affecting the heat centres. Therefore conditions of sunstroke may, and without doubt do present, produced by "blood deterioration" as a "primary" and not "secondary" manifestation. Dr. Wood's experiments were upon animals, in all of which a fatal result was rapidly induced, death occurring from overwhelming of the cerebral centres. In the absence of more positive disproving evidence, we conclude that disorganization of the blood, more or less complete, may exist, at least in those cases of sunstroke marked by slow progress and by gradual failure of the vital powers.

The production of sunstroke is thus explained :—

> "When a man is exposed to heat beyond his powers of resistance, there is a gradual, slow rise of temperature, until the stimulus of the heat becomes so intense as to paralyze either the heat-centre or the vaso-motor nerves, as the case may be, and then there is probably a sudden intensifying of the oxidation processes, and a further rise in temperature, accompanied or followed by an overwhelming of the cerebrum; in other words, intense fever with its accompaniments is developed."

Dr. Wood is inclined to the belief that fever is due to morbific impressions acting directly upon the nervous system.

The author has added the term thermic fever to the nomenclature of the disease. Heat fever, as suggested by Dr. Geo. B. Wood, it occurs to us, would be preferable. It conveys a direct meaning without mental effort on the part of the reader—an advantage to many individuals which is simply incalculable. In this respect Dr. Wood should have adhered to his motto (*pro bono publico*) rather than old association.

In treatment there is nothing particularly novel. Dr. Wood mainly relies on cold water, although he would not cast aside blisters, hypodermic injections of morphia, and chloroform. He even admits that bleeding may do good by abstracting heat, only claiming that that good is better obtained in other ways.

The fever following upon sunstroke is regarded as of the same nature as meningitis, and the line of treatment laid down in this affection is to be followed.

In conclusion, we would add that this little book is the fullest exposition of the subject in its exact scope anywhere extant, and it should be sought for in all quarters where sunstroke prevails. A. B. I.

Art. XXIV.—*Saint Thomas's Hospital Reports.* New Series. Edited by Dr. Bristowe, Dr. Stone, and Mr. Croft. Vol. ii., 8vo., pp. x., 381. London: J. & A. Churchill, 1871.

We shall first invite attention to the medical papers in this volume. These are rather more numerous than the surgical, and some of them are scarcely of as practical a character as is desirable in a volume of Hospital Reports. We are glad to see, however, that the editors are determined that the series, of which this volume is a part, shall not only be continuous but valuable, for even those papers to which we have alluded as not of a practical character show great care in their preparation. Dr. Peacock's communication is of course valuable, and to Dr. Evans belongs the merit of having contributed a paper which not only gives us a good deal of information, but will do much towards causing the recognition of the fact that thoracentesis is not merely a justifiable operation, but one which in many cases a due sense of his obligation to his patient will compel a conscientious physician to perform.

Art. I. *An account of some Experiments relating to the Influence Exercised by Colloids upon the Forms of Inorganic Matter.* By William M. Ord, M.B., London.—Mr. Ord contributed a paper to the first volume of these Reports, entitled "Some experiments relating to the forms assumed by uric acid," which was noticed in the April number of this Journal for 1871, and in which he showed very clearly that the crystalline forms assumed by uric acid in the urine have a definite relation to the composition of that fluid. In the present communication he demonstrates equally clearly that colloids have a decided influence in controlling crystallizing force, and that albumen is much more active, in this respect, than gelatine. The paper will be found of interest to those who are especially engaged in this kind of investigation, but does not very readily admit of analysis.

Art. II. *On the Period of Incubation of Typhus, Relapsing Fever, and Enteric Fever.* By Charles Murchison, M.D., Edin., F.R.S.—Dr. Murchison tells us that throughout the period of his active connection with the London Fever Hospital, he was on the constant lookout for cases calculated to throw light upon the subject of this memoir, and that in it he has placed on record all such cases he encountered among upwards of ten thousand patients suffering from the continued fevers, who have been under his immediate care. The paper is a long one, and we shall, therefore, give only his conclusions, which are as follows: "The period of incubation of typhus varies in duration in different cases. In a large proportion of cases it is about twelve days. In exceptional cases it is longer than twelve days, but it rarely, if ever, exceeds three weeks. In many cases (one third or more) it is less than twelve days, and occasionally there is scarcely any latent period, the symptoms commencing almost at the instant of exposure to the poison.

"The period of incubation of relapsing fever is not a fixed period, and is even more variable than that of typhus. It is, on the whole, shorter than that of typhus. Occasionally, as in typhus, there is scarcely any latent period at all, the symptoms commencing almost immediately after the first exposure to the poison.

"The period of incubation of enteric fever is most commonly about two weeks. Instances of a longer duration appear to be more common than in typhus or relapsing fever. The period of incubation is often less than two weeks, and, as in typhus and relapsing fever, it may not exceed one or two days."

Art. IV. *On the Existence of Continued Currents in Fluids.* By GEORGE RAINEY, M.R.C.S.—This communication is a sequel to the paper on the same subject in the first volume of these reports, which was briefly noticed in the April number of this Journal for 1871. Mr. Rainey has been able to simplify the apparatus by which the earlier experiments were performed. The conclusions at which he arrives are very similar to those reached in the former paper, and are as follows: 1st. That the particles of all fluids, irrespective of quantity or form, are always in motion; 2d, that this motion is produced by the combined operation of two forms of attraction, namely, that acting at apparent contact, and that acting at all sensible distances; 3d, that the movements of the particles in these distances, though modified by temperature, are not caused by it; 4th, that the rate of movement of these particles, besides being affected by certain physical properties of the fluid, such as that of density, of tenacity, etc., is influenced also by the form in which they are aggregated; as for instance, if the form be that of a sphere, all the particles, being directed towards one centre, will move more rapidly than if the same particles are extended over a larger space, and consequently be directed to several centres at the same time.

Art. V. *On Paracentesis Thoracis.* A Thesis read for the Degree of M. D. Cantab. By G. H. EVANS, M.D., M.R.C.P.—After giving a very full *résumé* of the history of this operation, Dr. Evans proceeds to state his reasons for believing it to be expedient to remove the fluid from the chest as early as possible in cases of pleuritic effusion, and for thinking that paracentesis thoracis is the best and safest way of accomplishing this. In the first place, pleuritic effusion may of itself cause fatal results, which could have been prevented by the early abstraction of the fluid, and to show this he reports a case in which the sudden death of the patient could be attributed to no other cause, and refers to numerous cases of a similar character recorded by Trousseau, Cruveilhier, Chomel, Aran, and others. Secondly. The long continued compression of one lung by pleuritic effusion predisposes to acute and chronic diseases, tubercular or otherwise, of the lung of the other side, simply because an overworked lung, like an overworked man, is placed in an unfavorable condition for resisting noxious influences to which it may be exposed. Of course, with one lung useless, the patient's chances of recovery are slight when diseases attack the other. Thirdly. The lung which has been long compressed by pleuritic effusion is rendered thereby incapable of re-expanding, not only in consequence of the formation of firm adhesions between the pulmonary and costal layers of pleura, and the thickening of the pulmonary pleura by the deposition of lymph, but also, Dr. Evans believes, because of the tendency to the stagnation and subsequent coagulation of the blood in the pulmonary artery which exists in cases of compression of the lung by pleuritic effusion.

The objections which have been made to the operation of paracentesis thoracis may be stated to be as follows: (*a*) the danger of death from syncope during or immediately after the operation; (*b*) the operation itself setting up suppurative inflammation; (*c*) the probability of the admission of air, and consequent suppurative inflammation; (*d*) the possibility of hemorrhage from the operation. In regard to the first objection, the author shows that out of a total number of 820 cases, in only two is it recorded that death was in any way the result of the operation; in one of these death was caused by hemorrhage from wounding small arteries by the puncture; in the other, it took place the next day, and was attributed to the shock of the operation. In none is there any mention made of the fatal syncope which has been supposed to be likely to ensue upon the sudden removal of a large pleuritic effusion. The belief that the operation itself has a tendency to cause fresh inflammation, especially if air be admitted, seems also to have very little foundation in fact. He does not himself believe that the admission of air into the pleural cavity is followed by an aggravation of the symptoms; but, even if it were, he sees no force in the objection, since the operation may be performed in such a way as effectually to exclude air. In twenty-eight cases, which he tabulated, the operation was performed more than once; in twenty-four of these the fluid drawn off was serum each time; in the remaining four cases it was purulent in one or more of the subsequent tappings. The probability of hemorrhage from the operation, alluded to by Dr. Addison, is best combated by a reference to the case mentioned above, as being the only one in 820 in which it occurred, and then it was said to be due to an abnormal arrangement of small anastomosing vessels.

In addition to relieving the patient at once of distress and dyspnœa, and freeing him from the danger of sudden death, the operation places him at once in a more favourable condition for the absorption of the remaining fluid, which is very well shown in one of the cases reported by the author. In this case the patient passed two gallons of urine during the twenty-four hours immediately succeeding the operation.

The tables which accompany the paper show very clearly the advantage of performing the operation early in the disease. Thus, out of a total of 533 cases, 373 recovered, 153 died, and in 7 the result is doubtful; this makes the rate of mortality 29 per cent. But out of a total of 308 cases, in which the effused fluid was serum, 74 died, making the rate of mortality 24 to 26 per cent. In 24 cases of serous effusion, in which the operation was performed not later than the end of the fourth week, 21 recovered and 3 died; in one of the three fatal cases there was disease of the liver, and in the other two the operation was performed as a last resource, merely with the view of prolonging life. In 17 cases where the operation was performed after the first month, but not after the second, 13 recovered and 4 died; one of these latter died two years afterwards from phthisis. In 10 cases where it was after the second month but not after the fourth, 5 recovered and 5 died. In 8 cases, where the effusion was of more than four months' duration, 3 recovered and 5 died.

Dr. Evans prefers to operate according to the plan proposed by Reybarb and adopted by Trousseau, which consists in tying a flap of moistened gold-beater's skin round the mouth of the canula so as to form a valve or curtain which admits of the air passing freely out, but prevents it from making its way in.

Art. VII. *On the Action and Use of the Opium Alkaloids, Cryptopia and Thebaia.* By John Harley, M.D., London.—Dr. Harley has already published some observations on the physiological action of cryptopia, but, having been enabled, by the kindness of the discoverers of the alkaloids, to prosecute his inquiries further, he gives us in this paper the results of his experiments with it on the dog, the cat, the rabbit, and on man. He believes that cryptopia, in its effects on the nervous system, stands exactly midway between morphia and thebaia, sharing equally in the qualities of both. "We have," he says, "applied the test of different nervous systems to the substance, and found that those of the mouse, of some dogs, and of man, give sleep, while those of other dogs, of the cat, and of the rabbit, give convulsion. A grand physiological truth lies here, for surely these experiments teach us that sleep and convulsion are but one, mutually and readily interchangeable, the variation being determined by certain peculiarities resulting from mechanical or molecular variations of the nervous system; in a word, the one test gives us white light, the other a coloured spectrum."

In regard to the excitant action of cryptopia as compared with that of thebaia, he says the broad distinction between the two alkaloids is this, that the convulsion of thebaia is a *persistent* spasm, and that of cryptopia an *intermittent* one. Thebaia holds the muscles with the most inflexible vigour, and the stiffened and motionless body may be held straight out by one of the extended hind legs. Cryptopia throws the whole of the voluntary muscular system into rapid and violent vibration. In regard to the difference between the hypnotic and general effects of morphia and cryptopia, the author says the sleep of cryptopia is as prolonged as that of morphia, but it is lighter and consequently more refreshing, and quite free from the illusions which so often attend sleep induced by morphia. But this is not the only advantage which cryptopia possesses over morphia. Cryptopia exercises no deranging influence over the vagus, and its administration either by the stomach or subcutaneously never gives rise to vomiting or to faintness. As an hypnotic it is about one-fourth as powerful as morphia. It is not eliminated to any great extent by the kidneys.

Dr. Harley has found that the hypnotic action of thebaia on man is, as far as has been observed, free from all unpleasant effects. As a soporific, 1½ grains are about equal to one-fourth of a grain of a salt of morphia. The contracting effect on the pupil is, in most cases, much weaker than that of morphia, but it possesses an equally stimulating effect upon the pulse. He has also found that atropia increases and prolongs the hypnotic action of thebaia.

Art. IX. *Remarks on the Healthy and Morbid Anatomy of the Perivascular System of the Brain.* By W. W. WAGSTAFFE, F.R.C.S.—After alluding to the history of the discovery of the perivascular system of the brain, Mr. Wagstaffe narrates three cases illustrative of its morbid anatomy. In the first case, tubercular deposits were found scattered freely over the surface of the brain, but the tubercle was always definitely related to the vessels. At tho upper surface of the hemispheres, clusters of miliary deposits were arranged along the sides of the larger vessels; in some cases the naked eye could trace small vessels running into single deposits: in a large mass in the Sylvian fissure, the carotid and the middle cerebral arteries were surrounded by the new growth. When a portion of the pia mater was examined microscopically, the relationship of the deposits to the vessels was still more clearly seen; the first thing which attracted attention being the marked distension of the perivascular canals. These, which are often difficult to demonstrate in the meninges in health, were now very distinct, and distinct from being distended with abnormal contents. They contained corpuscles exactly similar to those found in the masses of tubercles. But, besides the diffusion of the elements of tubercles in these perivascular canals, and their great abundance near the masses of the deposit, further evidence was obtained of the relation between them. One of the very small miliary deposits was examined, and found to be situated entirely within the perivascular sheath. The corpuscular bodies which are found within these perivascular sheaths are regarded as lymph-corpuscles, and there is, therefore, every reason to believe that miliary tubercles consist of aggregations of lymph-corpuscles, and in this connection Mr. Wagstaffe says; "I am inclined, then, to trace the source of these tubercle corpuscles to the cells occupying the sheath normally as an epithelium which is intermediate between tho spheroidal and tesselated varieties, and would look upon the disease as one of excessive multiplication. Although the elements of ordinary inflammation consist in the main of cells whose appearance is identical with these lymph-elements, we are not justified, I think, in looking upon the tuberculous disease as simple inflammation, or as His suggests, inflammation of the perivascular sheath, for we do not find an alteration in the fibrous part of the sheath wall, or the presence of fibre-cells, until later in the disease, when the primary deposit has probably acted as a focus of inflammation. Moreover, the peculiarity of the miliary character of the deposits distinguishes tuberculous from ordinary inflammation."

Art. XI. *Cases of Stricture of the Œsophagus.* By E. Clapton, M.D., F.R.C.P.—Two cases of stricture of the œsophagus are reported in this paper. In the first case death was probably due to hemorrhage from the left common carotid artery, the cancerous ulceration which originally affected the œsophagus and produced the symptoms of stricture having finally caused a perforation of the artery. In the second case, from the great relief afforded by the passing of bougies, Dr. Clapton was inclined to believe that there existed simply a fibrous thickening at the lower portion of the œsophageal tube.

Art. XII *On Ægophony.* By Wm. H. Stone, F.R.C.P.—From experiments which are detailed in this communication, Mr. Stone was led to the following conclusions in regard to the *modus operandi* of ægophony. The layer of fluid in pleurisy stops the larger and coarser vibrations of the ground-tone, but allows the fine and close undulations of the high harmonics to pass. "We thus," he says, "have phenomena in what we may call an ascending scale; beginning with the rough vibration of vocal fremitus, which, like some forms of loud cardiac murmur, is actually sensible to the tactile papillæ of the finger, but which is easily intercepted, through the phenomena of vocal resonance which are more penetrating, up to ægophony, which is thus explained to be vocal resonance divested of its lower fundamental tones by the deadening effect of a layer of more or less inelastic fluid. Therefore, I was led early in the paper to name it a filtration. It is thus not dissimilar in kind from that which, in a transparent medium, like glass, obstructs the undulations of sound and heat, but gives free passage to the finer and more subtle pulsations of light."

Art. XIV. *On Impairment or Loss of Power of Articulate Speech.* By John S. Bristowe, M.D., F.R.C.P.—This paper, although well written, and containing the reports of many interesting cases of the various conditions comprised under the term aphasia, does not advance any facts which have not already been considered in former numbers of this Journal, except perhaps the one that Dr. Bristowe is inclined to look upon agraphia as an amnesic rather than an ataxic defect. "The patient," he says, "cannot speak because he has forgotten words, he cannot read, because he has forgotten the precise meaning of letters and their combinations, and he cannot write because he cannot recall to his mind the complex combinations of strokes which represent words."

Art. XV. *On the Prognosis of Valvular Diseases of the Heart.* By Thomas B. Peacock, M.D., F.R.C.P.—Dr. Peacock shows very clearly in this paper that there are other elements which must be taken into consideration, in making a prognosis in valvular diseases of the heart, than the amount of lesion of the valves themselves. The principal sources of danger in this class of affections are three. 1, failure of the muscular power of the heart; 2, congestion of the organs anterior to the seat of obstruction; 3, thrombosis and embolism. These are more prone to occur in some forms of valvular diseases than in others, and they may be variously combined and may ensue at different times in the course of the same case. The following passage will give the results of his experience in a few words: "In reviewing what has been said as to the sources of danger in different forms of valvular disease, it will be seen that incompetency of the valves is regarded as a more serious defect than obstruction; and of the affections of the valves of the left side of the heart, I conceive incompetency of the aortic to be more dangerous than the similar condition of the mitral valves. Not only does incompetency of the aortic valves occasion great impediment to the circulation, and especially cause an imperfect supply of blood to the brain; but as the power of the left ventricle becomes rapidly exhausted, there is danger at any moment of death by syncope. In the corresponding condition of the mitral valves, though it seriously obstructs the pulmonic circulation and occasions great visceral congestion, death is brought about more slowly as the result of the imperfect aeration of the blood and its impure condition from the state of the parenchymatous viscera, and by dropsical effusions, as sudden death is less likely to occur. As regards obstructive disease of the two sets of valves, I should reverse the order in which they are regarded as serious, obstructive disease of the mitral being apparently a more important defect than the same affection of the aortic valves. In the former condition the combined power of the left auricle and right ventricle is unable adequately to propel the blood through the left auriculo-ventricular aperture, and hence the lungs and other organs soon become very greatly engorged; while in cases of aortic constriction the left ventricle long resists the impediment, and it is only when the obstruction has become extreme, and the power of the ventricle is impaired, that the more distant organs are involved."

Conditions, other than those already mentioned, which are not without influence on the duration of the patient's life are, 1, the number of valves diseased; 2, the nature of the complications, and 3, the circumstances of the individual.

Dr. Peacock also calls attention to the fact that the intensity of the murmur is by no means the measure of the amount of disease. "For the production of a murmur," he says, "two elements are necessary; there must be a source of obstruction to the circulation, and the blood must be propelled with power through such impediment." Hence, for instance, in cases of general bronchitis accompanied by great embarrassment of the circulation, the heart action may be so feeble as not to give rise to a murmur, which, however, will be distinctly heard when under the influence of rest, a genial temperature, and suitable treatment, the bronchitic symptoms have subsided and the action of the heart has become stronger and more regular.

Art. XVIII. *On Hypertrophic Polypus of the Os Uteri, and its relation to Hypertrophy of the Cervix Uteri.* By ROBERT BARNES, M.D.—Dr. Barnes, after speaking of the fact of the frequent coincidence of small polypi springing from the edge of the os uteri, with hypertrophy and prolapsus of the cervix uteri, which has led to the conjecture either that a common cause produces both, or that one entails the other, says that the truth appears to be that the excessive growth which results in hypertrophy, sometimes also produces polypi as well. The pathological history of "hypertrophic polypi" may be told as follows: The first condition of their existence is hypertrophy of the cervix uteri. Frequently the os uteri being lobulated or fissured, as is also seen after labour, one lobe or portion of a lip may take on an exaggerated growth, and project beyond the level of the os. "In such a case," he says, "if studied by the light of observation of more advanced or completed polypoid formation, we may see the origin of the hypertrophic polypus. A small lobe, more or less marked out on the os by a fissure or depression on either side, continues to grow under the same stimulus that determines the general hypertrophy of the cervix. It grows a little more quickly; then its base, being compressed by the firm structure of the os on either side of it, is squeezed and elongated until it assumes the characteristic polypoid shape."

In regard to the treatment of these polypi, he says they should be removed with the scissors. The bleeding which is apt to follow this operation should be checked by hemostatics, the precaution being taken to keep the patient in bed for two or three days afterwards, if there is much hypertrophic extension of the cervix uteri. After the inflammation excited by the operation has subsided, a free slough of the most hypertrophic lip should be wrought by applying potassa cum calce, or the actual cautery in a line across the lip. The healing of this slough induces altered nutrition of the part, promotes absorption, and the contraction following, being inwards, or centripetal, acts in direct antagonism to the morbid hypertrophic extension.

*Report of the Obstetrical Department.* By HENRY GERVIS, M.D., London.—From this report it appears that 1250 children were born in the obstetrical wards of St. Thomas's Hospital between December 6, 1869, and December 6, 1870. Of this number 1206 were born alive, and 44 were stillborn, or 3.5 per cent. Eighteen women were delivered of twins. Of the 1232 cases attended, 150 were first labours; 169, second; 170, third; 176, fourth; 149, fifth; 110, sixth; 102, seventh; 67, eighth; 58, ninth; 32, tenth; 14, eleventh; 13, twelfth; 10, thirteenth; 2, fourteenth, and 1 was a seventeenth labour. Of the 1250 children born, the following specifies the presentation: vertex, 1212; breech, 23; footling, 5; arm, 2; face, 5; brow, 3.

The usual table of diseases treated at the hospital, during the year, is appended to the volume. J. H. H.

We shall now invite our readers' attention to those papers which are particularly interesting to surgeons, and in the first place to

Art. III. *Some Remarks on Gunshot Wounds of the Lower Extremity.* By WILLIAM MAC CORMAC, F.R.C.S.—Mr. Mac Cormac's name is already familiar to the readers of this Journal through bibliographical notices of several surgical pamphlets, which he published while connected with the General Hospital at Belfast, and more recently through notices of his well-known volume, "Notes and Recollections of an Ambulance Surgeon," which was founded on the author's large experience during the recent Franco-Prussian war. The present paper is characterized by the same philosophic and eminently practical tone which marked Mr. Mac Cormac's previous writings, and may be studied with advantage by both civil and military surgeons. With regard to the treatment of gunshot fractures of the femur, the author says:—

"The first examination should be the only one, and must determine whether an attempt shall be make to preserve the extremity. After that, the less handling or interference of any kind the better. Stromeyer urges that our first care should be to endeavour to save the life of the patient with fracture of the thigh, and afterwards, if possible, to rectify the deformity. . . . There can be little doubt, that violent continuous extension of a bullet-smashed femur, combined with frequent handling and re-adjustment, must prove injurious in the extreme. Stromeyer has almost completely abandoned forcible extension and counter-extension, and prefers simply to lay the limb on the side, in the position advocated by Pott. In my own practice I employed long splints sometimes, sometimes sand bags, with a small weight merely to steady the limb attached to the foot. In two instances that I know of, subsequent deformity was successfully relieved by refracturing the bone. . . . When amputation is considered necessary in these cases, let it be done at once, during the first twenty-four hours. . . . A very interesting question is raised by Stromeyer in respect of amputations, namely, that we need not amputate clear of the diseased or injured soft tissues in ordinary cases, but may divide the bone, unless split up and inflamed, just at the seat of fracture. The track of a ball or a sinus may safely be left in the flap, and the high division of the bone, which so largely increases the risk, is thus obviated. . . . The considerations detailed in this paper appear to me to afford ground for concluding against the universal application of amputation in regard of gunshot fractures of the shaft of the femur. Sound, though it may be delayed, union will often follow conservative treatment. I think for general guidance we may for the present declare that, in fractures of the lower half of the femur, the rule should be when in doubt to amputate, while in those of the upper half of the bone the converse should apply, namely, when in doubt to try to preserve the limb."

Mr. Mac Cormac's paper is illustrated with two plates, which appear to have been executed by what is known as the "heliotype" process.

Art. VI. *On the Therapeutical Importance of Recent Views of the Nature and Structure of Cancer.* By HENRY ARNOTT, F.R.C.S.—This paper is one of great interest and value, and its conclusions carry with them a great deal of authority, on account of the author's large practical experience in the cancer wards of the Middlesex Hospital. Referring to the diversity of opinion which prevails among medical men as to the advantages to be derived from operations in cases of cancer, Mr. Arnott remarks, "that the majority of operating surgeons are strongly in favour of the knife, whilst the majority of physicians and surgeons, little used to operations, declaim against this remedy." The fact is we believe correctly stated, but we are loth to accept Mr. Arnott's explanation, that "personal prejudice" influences either party's judgment in the matter; we believe the true explanation is to be found in the different nature of the operator's and of the non-operating medical man's experience; the former has often the opportunity of seeing the advantages derived from early interference, while the latter, regarding an operation as a forlorn hope not to be resorted to as long as it can be avoided, necessarily sees the operation performed under less favourable circumstances, and forms a less favourable opinion of the benefits which it is capable of conferring. In discussing the oft-mooted question of the local or constitutional origin of cancer, Mr. Arnott considers with great fairness the various facts and arguments which have been advanced on either side, and states his conclusions in the following language:—

"A calm survey of the two opposite views of the nature of cancer, and of the facts which are adduced in support of them, seems to leave us in about this position: that, while it is impossible absolutely to deny the existence of a special dyscrasia as the cause of the appearance of malignant tumours, the evidence in its favour will not bear careful scrutiny, although it may be admitted that certain individuals and even families exhibit a remarkable predisposition to the occurrence of these growths, just as a similar predisposition may be shown to the appearance of fatty growths, warts, or other such local defects of nutrition; that owing to appreciable physical causes—as the special arrangement of structural elements, the part of the body attacked, etc.—certain tumours are more prone to malignancy than others; that whether the original growth be absolutely local or depending on general changes in the system, a stage may be at length reached in which there may be, indeed, an ineradicable and necessarily fatal blood contamination; and, finally, that as all the real evidence before us goes to prove that it is in any case the *local tumours or ulcers which kill*—either by invasion of vital organs, or by the breaking up of health caused by excessive hemorrhages, pain, and exhausting and fetid discharge from the primary seat of the disease—these should be completely removed when possible."

Art. VIII. *Description of a Case of Unreduced Dislocation of the left Femur, in which Death occurred Eight Days after the Receipt of the Injury.* By WILLIAM MAC CORMAC, F.R.C.S.—It is so seldom that the surgeon has an opportunity of dissecting the parts concerned in an unreduced recent dislocation of the hip, that Mr. Mac Cormac's description of the appearances observed in the instance here narrated is of much interest. The dislocation in the case given was backwards, the head of the bone (as shown by a well executed wood-cut) lying just behind the acetabulum, with the pyriformis and gluteus minimus muscles above, and the obturator internus and torn gemellus muscles immediately below. After quoting the views of our distinguished fellow-countryman, Prof. Bigelow, as to the mechanism of hip dislocations, Mr. Mac Cormac adds:—

> "A careful examination of my own specimen confirms in a remarkable manner most of these statements. After dissection the deformity was persistent and identical with that existing during life. The dislocating force had been applied when the thigh was flexed at right angles, and the bone was driven directly backward between the pyriformis and obturator internus muscles. The locking or rigid condition of the limb was very evident, while the rent in the capsule was limited to its posterior part. Manipulation after the manner described by Bigelow appeared in the dissected specimen to be the way in which the head of the bone might most readily be returned to the socket."

Art. X. *Remarks on the Theory and Practice of Epidermic Grafting.* By William Anderson, F.R.C.S.—In this paper Mr. Anderson, who is the Surgical Registrar of St. Thomas's Hospital, gives an interesting account of the experience at that institution of M. Reverdin's method. In the following sentences, the writer, it seems to us, estimates very justly the advantages and disadvantages of the new process as compared with ordinary plastic operations; in the latter,

> "we cover in a freshly exposed surface with a portion of integument in its entire thickness, usually commensurate in size with the area prepared for its reception, and retaining a connection with adjacent parts by means of a vascular isthmus. Such a covering possesses, of course, all the natural advantages with the minute structure of true skin, but the material employed for filling up the one gap has been gained by making another. . . . On the other hand, epidermic grafting, after the manner of M. Reverdin, has the recommendation that the amount of tissue required for the process is small, the operation simple and without risk, and, more particularly, that a failure is in no degree serious; but it must be borne in mind that the best result attainable is the production of a sound cicatrix, often, it is true, stronger and more pliant than the ordinary cicatrix of a large slowly healing sore, but still possessing the main imperfections of such a texture."

Art. XIII. *Cases of Inversion of the Bladder.* By John Croft, F.R.C.S.—The great rarity of the occurrence of inversion of the bladder may be inferred from the fact that Mr. Croft's case is but the fourth which has been recorded. The affection is exclusively met with in female infants, and Mr. Croft's patient (aged 14 months), was the youngest of the four whose histories have been published. This case is also remarkable on account of the occurrence of rupture of the inverted viscus (as shown by the escape of a clear, straw-coloured, *non-urinous fluid*), an accident which did not, however, entail any unfavourable consequences after the reduction of the protruded organ. In order to add to the interest of his paper, which is one of great value, Mr. Croft annexes abstracts of the three cases previously observed by Dr. Murphy, Mr. Crosse, and Dr. Lowe respectively.

Art. XVI. *On a New Method for Extraction of Cataract.* By R. Liebreich, M.R.C.S.—This paper contains the best account which we have as yet seen of Mr. Liebreich's new operation, of which we shall now endeavour to give our readers a description, using, as far as possible, the author's own words. The distinctive peculiarities of Mr. Liebreich's method are, that the section is made in a downward direction, and lies entirely (except the points of puncture and counter-puncture) within the cornea, and that there is no iridectomy. The instruments employed are a very small Graefe's knife, a cystotome, and a common Daviel's spoon, all of which may be combined in a single handle. The patient is placed on his back, the pupil having been previously dilated with atropia, and chloroform may be administered if necessary; the surgeon stands behind the patient's head to operate on the right eye, and at his left side to operate on the left eye.

"Supposing the right eye is to be operated upon. In that case the operator takes hold of the upper eyelid with the index finger of his left hand, whilst he slightly presses the middle finger against the inner canthus of the eye. The knife held in the right hand with its back horizontal and backwards, the plane of the blade making with the horizontal meridian of the eye an angle of about 45°, enters the sclerotic with its point about one millimetre externally to the margin of the cornea. . . . *Without altering the direction*, the knife passes through the anterior chamber in order to make the contra-puncture on the opposite side, so that the point of the knife becomes visible in the sclerotic, about one millimetre (or less) distant from the cornea. The knife is now pushed forwards, so that its retraction finishes the incision. As soon as the incision is made, the eyelid is to be dropped.

"The second part of the operation consists in the careful opening of the capsule.

"In the third part, Daviel's spoon is slightly pressed against the inferior margin of the cornea, and the index finger of the left hand, which holds the upper eyelid, through it exerts a very slight pressure on the highest point of the cornea. Thus the lens is made to rotate a little, its lower margin presses in the manner already described against the posterior surface of the iris, pushes the iris forward, passes along it to the margin of the pupil, overcomes the obstacle and places itself freely in the wound, which is made to gape by Daviel's spoon pressing against it. A slight pressing movement of the index finger of the left hand, by means of which the upper eyelid is shifted from above downwards over the cornea, serves to expel the lens. Similar movements of the lids are employed for the purpose of forcing out any *débris* of the cortical substance, after pushing them from behind the iris towards the pupil, by gently rubbing the shut eyelids. Should the pupil then not appear round, but its margin drawn towards the wound, it regains its normal position by an outward shifting of the lower lid; or, if that be not sufficient, by the introduction of Daviel's spoon."

The after-treatment consists in the instillation of atropia, and the application of a compressing bandage.

Art. XVII. *On Cleft Palate.* By Francis Mason, F.R.C.S.—Mr. Mason, in this short but practical paper, refers to the well-known fact that in many cases, though staphyloraphy may succeed as an operation, it yet fails in obtaining the desired improvement in the patient's voice. This is of course due to the circumstance that a fissured palate is not a mere slit or rent, but an absolute want of substance in the part, and that hence the approximation of the edges of the cleft converts the soft palate into a curtain, which is tightly stretched across the fauces, and which leaves a space behind, through which air enters the posterior nares and gives rise to the peculiar guttural sound of the voice so often observed in these cases.

In order to obviate this defect, Mr. Mason performs a supplementary operation three or four weeks after the successful closure of the palatal fissure:—

"A narrow spatula is first passed behind the soft palate, partly to steady it, and partly to draw it forward. A sharp-pointed bistoury is then made to transfix the soft palate at the inner edge of the hamular process, . . . first striking against and then being carried by the side of and beyond the spatula. An incision is made, . . . severing the attachments of the palate to the side of the fauces, together with the anterior and posterior pillars, dividing in its course chiefly the tensor palati, and palato-glossus, and palato-pharyngeus muscles. After the incision is completed, the palate retracts by muscular action. . . . The proceeding is repeated on the opposite side, and thus the palate is converted into a loose, movable curtain, somewhat resembling the uvula on a large scale, which in favourable cases effectually shuts off the communication between the posterior nares and the cavity of the mouth. Thus the passage of air is diminished, if not entirely prevented from passing upwards towards the nose during the act of speaking. The last step of the operation consists of introducing with a needle one or two stitches, from before backwards, through the sides of the flap, hemming the mucous membrane, as it were, . . . to prevent adhesion between the cut surfaces."

Mr. Mason has employed this operation in eleven cases, always with some, and often with very marked, benefit to the patient.

Art. XIX. *Contribution towards the Surgical Treatment of Diseased Joints.* By Sydney Jones, F.R.C.S., M.B., etc.—This paper may be regarded as a continuation of that published under the same title by the author, in the first volume of the Reports.[1] Five cases of excision are detailed, viz., four of the knee, and one (by Lister's method) of the wrist-joint. One of the knee cases terminated fatally, but the other three, and the case of wrist-joint excision, resulted in the preservation of very useful limbs. Mr. Jones promises to record, in the next volume of the Reports, a number of cases of excision occurring in young subjects. This interesting paper is illustrated with two excellent lithographic plates.

The volume terminates with the customary carefully compiled medical and surgical statistical tables, and with a short account of "The Old Students' Gift" to the hospital which gave them their education, this gift consisting in finely executed busts of one of the early surgeons and one of the early physicians of the hospital, the illustrious Cheselden, and the no less illustrious Mead. Excellent heliotypes of these busts accompany the volume, the portrait of Cheselden serving as a frontispiece, and that of Mead being inserted among the closing pages of the book.

In laying down the second volume of the new series of St. Thomas's Hospital Reports, we remark with pleasure that its list of contributors now embraces a very large proportion of the medical officers of the Hospital, there being indeed but two or three whose experience during the current year appears to have furnished nothing worthy of publication; on the other hand, there are fewer papers than in the first volume by gentlemen unconnected with St. Thomas's, so that the Reports are more closely approaching to what should be their distinctive character, as emanating from a Hospital Staff. J. A., Jr

## Art. XXV.—*Transactions of the Medical Society of the State of New York for the Year* 1870. 8vo. pp. 429. Albany, 1870.

This handsome volume contains, in addition to a record of the Society's proceedings at its sixty-third annual meeting, and the various lists of officers, honorary and permanent members, etc., several papers of more or less scientific interest, to the more important of which we now intend to invite our readers' attention.

The "President's Address," by James P. White, M.D., of Buffalo, has for its subject *Progress in Medicine*, and succinctly enumerates and comments upon some of the most noteworthy improvements in the healing art which have been introduced during the last forty years.

The next article is a "Case of luxation of the tendons of the posterior tibial and peroneal muscles of both legs, from stretching or rupture of the annular ligaments, by descending a monument with *high-heeled boots*," by LEWIS A. SAYRE, M.D., Prof. of Orthopædic Surgery, Bellevue Hospital Medical College, etc. This case is certainly a very remarkable one: the patient, a damsel of 19, who from the accompanying illustration appears to have been the possessor of a very neat foot and ankle, met with the accident described while descending the Groton Monument, in Connecticut, about four months before coming under Prof. Sayre's observation. She then could not take a single step, but fell instantly, her lower limbs doubling up under her, whenever she attempted to walk. By an ingenious application of adhesive strips, with India-rubber bands, to keep the dislocated tendons in place and to supplement the action of the affected muscles, Prof. Sayre succeeded in affording her instant relief, and in eventually obtaining a perfect cure.

---

[1] See number of this Journal for April, 1871, p. 528.

The epidemic of high heels appears to have prevailed in a more virulent form in New York than in our own quiet city; at least we have never seen here "ladies compelled to go down stairs backwards" for fear of falling, as Prof. Sayre tells us they are in New York, where, he adds, "you can see them every day descending the stoops of our fashionable residences in this manner, making a pretense of talking to some imaginary person in the front door as an excuse to hide their awkward movements."

Dr. WM. J. ORTON, in Art. IV., advances the theory that the cause of tuberculosis is the presence of an excess of phosphorus in the system, and recommends the elimination of the morbific element by giving the patient plenty of fresh air, and by the administration of cod-liver oil and iodine, while such portions as cannot be eliminated are to be neutralized *in situ* by the inhalation of the vapour of turpentine.

"Fractured clavicle" is the subject of Art. V., the author being Dr. E. M. MOORE, of Rochester. The mode of treatment recommended is the application of a broad bandage or shawl, forming figure-of-8 turns around the sound shoulder, and the elbow of the affected side, so as to make tense the clavicular fibres of the pectoralis major muscle, the management of which fibres the author looks upon as "the key to the solution of the difficulty that has thus far hung around the treatment of this facture." Our readers will find a description with an illustration of Prof. Moore's method (which is essentially the same as that of Prof. Sayre) in the last edition of Hamilton's "Fractures and Dislocations;" but that the last-named writer does not regard the plan in question as the great discovery that its author evidently believes it to be, may be inferred from the fact that, in his more recently published "Principles and Practice of Surgery," Prof. Hamilton ignores Dr. Moore's method altogether.

Art. VI. is an "Address delivered before the Chemung County Medical Society, at Elmira," by its President, Dr. T. H. SQUIRE, and contains a suggestion which we would respectfully commend to the attention of those gentlemen who are understood to be engaged in revising our Philadelphia "Fee Bill:" this is, that, as an *untreated* fracture is likely to leave as imperfect a limb as a fracture which is *unskilfully* treated, and as juries are apt to award exemplary damages to the victim of unskilful treatment, "it is, therefore, not unfair to estimate the value of the skilful surgeon's services, in the case of a broken limb, at from five to ten thousand dollars."

Art. VII. is upon "the endoscope, considered particularly in reference to diseases of the female bladder and urethra," and is contributed by ROBERT NEWMAN, M.D., of New York. The author describes some modifications which he has made in the original instrument of Desormeaux, and gives details of several cases of hæmaturia, cystitis, and urethritis, which he has successfully treated.

"The big nævus" is the somewhat startling title of Article VIII., which is from the pen of Geo. H. Hubbard, M.D. The nævus in question measured twelve inches in its long diameter by eight inches transversely, and "appeared to be about two inches deep at the most prominent part." Injections of persulphate of iron and applications of the actual cautery had been already used by "an eminent surgeon of the city of Troy," with the sole effect of "causing several deep ulcerating holes, from which issued a horribly offensive discharge." Dr. Hubbard removed the tumour by means of the ligature, and the resulting wound contracted, until there remained only "an unhealed surface near the lower right-hand corner, less in size than a half dollar," when an abscess formed beneath the latissimus dorsi muscle, and the wound re-ulcerated and assumed a fungous character, the patient ultimately dying from exhaustion and repeated hemorrhages twenty months after the date of operation. It appears to us that Dr. Hubbard's case may not improbably have been an instance of the supervention of cancerous upon previously existing nævoid disease, an event the occasional occurrence of which is referred to by Paget and other writers on Surgical Pathology.

Art. IX., "Malignant tumours of the abdomen," by Frederick Hyde, M.D., presents no points which seem to us to call for special comment, while Art. X., "Lithotomy and lithotrity, etc.," by Gurdon Buck, M.D., has, in the form of a pamphlet reprint, been already noticed in these pages. (See number for July, 1872, p. 237.)

Art. XI., "Cases of chorea," by Wm. C. Wey, M.D., of Elmira, is one of considerable interest. Two of the six cases narrated occurred in young girls, sisters as the result of prolonged starvation, exposure to cold, and other ill-treatment, inflicted as part of the system of education in a fashionable boarding-school, of which we only regret that Dr. Wey has not published the name and locality.

In Art. XII., Dr. Hiram Corliss reports a case of fractured skull, in which he resorted to trephining with a fatal result; and in Art. XIII., which only occupies nineteen lines, Dr. Charles Barrows, of Clinton, N.Y., describes an enlarged kidney which was revealed in a post-mortem examination.

Dr. Samuel Peters, of Crescent, Saratoga County, recommends, in Art. XIV., the use of chlorate of potassa in cases of serous effusion.

Art. XV. gives an account of "A luxation of the ulna not hitherto described, with a plan of reduction and mode of after-treatment, including the management of Colles's fracture," and is written by E. M. Moore, M.D., of Rochester. Prof. Moore's views have already been published in the New York Medical Record, and an account of them has been given by Prof. Hamilton in the last edition of his Treatise on Fractures and Dislocations, so that by this time they are probably sufficiently familiar to American surgeons. With regard to the occurrence of dislocation of the lower end of the ulna, in cases of Colles's fracture, we must express our disbelief that it is by any means so frequent as seems to be thought by Prof. Moore. Certainly in the large number of such fractures which it has been our lot to treat, we have very seldom found that difficulty in reduction to which Prof. M. alludes, and to which he believes he has found "the key." As for the treatment advised in cases of Colles's fracture, the application (after reduction) of nothing but a compress and adhesive strip, with a narrow sling, and the total abandonment of all dressings after fourteen days, we regard it as one of the most dangerous recommendations which has ever been made by an American surgeon; with all respect for Prof. Moore, we must express a sincere hope that his practice will find few imitators in this particular.

In Art. XVI., Dr. THOS. M. FLANDRAU gives an interesting account of twelve cases of Trichinosis, six of which proved fatal; in Art. XVII., Dr. C. C. P. CLARK discourses concerning the "Management of the obstetrical forceps;" in Art. XVIII., Dr. R. L. WATERBURY describes the medical topography of Delaware County (N.Y.); and in Art. XIX., the last of the strictly scientific papers, Dr. R. H. WARD narrates a case of successful operation for large vesico-vaginal fistula. Then follow an address on the life and character of the late Dr. ALDEN MARCH (whose portrait adorns the volume as a frontispiece), by Dr. JAMES L. BABCOCK, and short biographical sketches of Dr. BENJAMIN J. MOOERS and Dr. URIAH POTTER, contributed respectively by Dr. T. DE FORRIS and Dr. M. SNYDER. The volume terminates with the customary lists of officers, members, etc.

Upon the whole, the New York State Medical Society may, we think, be justly congratulated upon the general harmony of its proceedings at its sixty-third annual meeting, and upon the scientific value and handsome appearance of its published volume of transactions. J. A., JR.

---

ART. XXVI.—*History of Medicine, from the Earliest Ages to the Commencement of the Nineteenth Century.* By ROBLEY DUNGLISON, M.D., LL.D., late Professor of the Institutes of Medicine and Medical Jurisprudence in the Jefferson Medical College of Philadelphia, etc. etc. Arranged and edited by RICHARD J. DUNGLISON, M.D. 12mo. pp. 287. Lindsay & Blakiston, 1872.

THE well-earned reputation of Professor Dunglison, as one of the most learned and useful of recent medical authors, will secure many readers for this volume, apart from the importance of its subject. Moreover, the topic of the history of medicine bears better than almost any other (except in its latest phases) to be regarded from the stand-point of the last generation. After reading the work with unabated interest from beginning to end, we are prepared to think it a good service to the profession, especially to its junior members, for it to have been published; although more than a quarter of a century must have passed since its composition. This occurred in the form of a course of lectures, which were delivered at the University of Virginia, in accordance with the desire of Thomas Jefferson and his associates, as a part of the very extended duties of Professor Dunglison. These duties included also instruction in "Physiology, Materia Medica and Pharmacy." Of the very few men capable of such cyclopædic labours as this combination of branches involved, the author of the present work was certainly one. As stated in the editor's preface, a certain portion of the earlier part of the book was condensed from the *Geschichte der Arzneykunde* of Kurt Sprengel.

In the proportion of attention given to different eras in the history of medicine, Professor Dunglison appears to have been governed somewhat by the old world and "old time" predilection for the classical ancients. So it happens that, in a volume of less than three hundred pages, one hundred pages bring us only to Hippocrates, sixty more to the Christian era, and two hundred in all to the end of Arabian supremacy in Spain. After this comes the "State of Medicine among the Monks of the Middle Ages;" the close of which chapter leaves but about eighty pages—less than one-third of the volume—for the last six centuries before the present. Every page of the account of ancient medicine is full of interest; it is merely a question of proportion and utility. One cannot but ask why the student needs to read (he surely will not remember) the names, and mostly the nativities, of *twenty-seven* of the followers of Herophilus and Erasistratus, of all of whom it is said, that "they are spoken of with but little respect by Galen, and are said to have been arrogant and loquacious." Nor is it much more momentous, that "history particularly mentions Kha-reth-Ebn-Kaldaht of Takif (A.D. 622), a contemporary of the prophet, who had studied also at Dschondisabour in the Chuzistan," or that the Archbishop of Canterbury, A.D. 671, forbade bleeding in the first quarter of the moon. When we come to the later centuries, we miss the space which might, we conceive, have been there devoted to a much fuller history of the discovery of the circulation of the blood, and later still, to that of the discovery and introduction of vaccination by Jenner.[1] Something more than a mere mention of the fact of the discovery of galvanism (without even a single name) might have been well, in the chapter upon the eighteenth century; and the labours of the chemists, who made the close of that century brilliant, might have been touched upon. Lavoisier is not even alluded to; although his treatise, published in 1789, marked a new start in chemistry, and indeed, through his researches upon respiration, in physiology as well. Some of the greatest discoveries of Priestley, Scheele, Cavendish, and Berthollet, also belong to this century. The wealth of detail, almost exhaustive in the work before us, upon the medical vagaries of the ancients, not only of Greece, but of Egypt, India, and China, makes us regret that a similar amplitude of research was not sustained to the end. It would not then have occurred that Auenbrugger, whose treatise on Percussion was published in 1761,[2] would have have been left out; or that the same should be the case with Broussais, born in 1722; Laennec, 1781; and, in surgery, Boyer and Dupuytren. Some mention might, perhaps, to advantage, have been made even of Senac, whom Morgagni called the great; and in Italy, of Baglivi, an able and most practical physician and writer; if not of Rasori, of "contro-stimulant" fame. So might the name, at least, of the vitalist, Barthez of Montpellier, have found a place; and more than this, of Pinel, whose introduction of the rational and humane treatment of the insane (treatise published in 1791) was a striking event in medical history.

Candor requires the expression of a similar opinion as to the lack of entire completeness in the otherwise well-written addition, by the editor, upon early American medicine. It is true, as his own last words indicate, that, in the case *at least* of Dr. Rush, "a sketch of American medical history may seem to be incomplete" which gives, of that truly great man, the name alone. Nor is Physick even mentioned at all, although he was in active practice in 1793; nor Wistar, born in 1761; nor John Warren, born in 1753. Still, the facts given in this supplementary sketch, especially concerning the origin of the medical schools, are important, and add value to the work.

With a style, throughout, of transparent clearness and finished elegance, Dr. Dunglison's book is one which every physician may read through with pleasure as well as with profit. In the qualifying remarks we have made, our judgment has been guided chiefly by our expectation of a degree of perfection in any work from the hand of its distinguished author. There is no other book within our knowledge, of less than twice its bulk, that conveys so much information upon the history of medicine, or that does what it undertakes so well. Our principal reason for regretting the partial insufficiency of Professor Dunglison's outline of the progress of the later ages is, that, by his portraiture of medicine, having made most prominent those features of crudity and mutability which belonged to its infancy and youth, the science is rendered less attractive to the student, and less worthy of enthusiasm and respect, than it now deserves to be. H. H.

---

[1] The date of Jenner's first vaccination is placed two years later (1798) than that given by his biographer.

[2] It is true that it was little noticed until translated by Corvisart, in 1808.

Art. XXVII.—*Two Frequent Causes of Uterine Disease.* By D. HUMPHREYS STORER, M. D., late Professor of Obstetrics and Medical Jurisprudence in Harvard University. From the *Journal of the Gynæcological Society of Boston* for March, 1872. 8vo. pp. 12.

IN November, 1855, Dr. Storer delivered the Introductory Lecture to the Medical class of Harvard University. When the lecture was printed, a portion of it was, it appears, suppressed by its eminent author, at the request of a member of the College Faculty, who considered that its publication would be injudicious. The suppressed portion of the lecture is now made public by Dr. S., at the earnest solicitation of his friends who then heard it, from the original manuscript without the erasure or alteration of a single word.

The two "causes of uterine disease" to which Dr. S. has reference are, first, the destruction of the fœtus in utero, in order to avoid the pain, anxiety, confinement, trouble, and expense incident to motherhood, and, secondly, the several means adopted for the purpose of preventing impregnation, in attainment of the same ends.

Simply glancing at these two subjects, in passing, in their moral and legal bearings, Dr. S. as a physician discusses them as prominent and potent causes in the production of those distressing, painful, enfeebling, and troublesome diseases of the uterus, which are daily becoming more and more frequent and impairing the comfort and usefulness of so many women. In a medical point of view, the consideration, by Dr. S., of procured abortion and the unnatural interference with the regular physiological exercise of the uterine functions as passive morbific agencies, is particularly able. The truth of his conclusions cannot be called in question, and, if those members of our profession who command the confidence and can, if they will but take the trouble, influence hygienically the minds and actions of a large female *clientele* would urgently impress upon the latter the views of Dr. S., the highly evil practices referred to might be lessened if not entirely suppressed. D. F. C.

ART. XXVIII.—*On the Antagonism between the Action of Physostigma and Atropia.* By THOMAS R. FRASER, M.D., Lecturer on Materia Medica and Therapeutics at Surgeon's Hall, Edinburgh. From the Transactions of the Royal Society of Edinburgh. Vol. XXVI.

THE experiments on which this essay is based are a continuation of a preceding series undertaken in the same general line. The author very correctly lays dow the proposition that, in order to prove the existence of any real antagonism between two poisonous substances, it is necessary first to establish the fatal dose of the substance to be antagonized. In the instance before us, by a number of preliminary experiments, he accurately determined the minimum lethal dose of physostigma on rabbits (the animal employed by him), of an average weight of three pounds. This point being definitely settled, a dose of atropia was next given, in combination with the ascertained lethal dose of physostigma, and the fatal result was prevented. The conclusion then seemed perfectly warrantable, that "*when the administration of atropia prevented an otherwise fatal dose of physostigma from causing death, a perfect demonstration was obtained of the power of atropia to produce some physiological action, or actions, that counteracted some otherwise lethal action, or actions, of physostigma.*"

The minimum fatal dose of the extract of physostigma for a rabbit weighing three pounds was ascertained to be 1.2 grains, or 0.4 grain per pound. The minimum fatal dose of *sulphate of physostigmia* was about 0.12 grain, or ten times less than that of the extract. Dr. Fraser notices the fact, that these preparations of Calabar bean are not always of uniform strength, as furnished by different manufacturers—a circumstance that must be taken into the account by experimenters.

In one series of experiments, where the dose of physostigma was the minimum fatal one, Dr. Fraser found that the minimum dose of atropia required to antagonize the former was 0.009 grain; and "that any dose ranging from 0.009 grain to 5.2 grains would counteract the poisonous effects of the minimum fatal dose of physostigma." If, however, the dose of atropia exceed this, and reach to 5.3 grains or more, then "the region of successful antagonism is left, and death occurs;"—the fatal result here being ascribable to the antidote. If the dose of physostigma be increased beyond the minimum lethal dose, a curious and interesting fact is brought out, namely, that there is a sort of ratio or relationship between these two poisons, of an inverse character; thus, while the smallest fatal quantity of physostigma will tolerate a comparatively large dose of its antagonist atropia, by increasing the amount of the former, the maximum antidotal dose of the latter seems to be diminished in about the same proportion. Thus, with one and a half times the minimum quantity of physostigma, the dose of atropia required for successful antagonism was from 0.02 grain to 4.1 grains. With twice the minimum fatal dose of physostigma, the amount of atropia required was 0.025 grain to 3.2 grains. With two and a half times the minimum, the quantity of atropia was 0.027 grain to 2.2 grains. With three times the minimum, the dose of atropia was 0.06 grain to 1.2 grains. With three and a half times the minimum fatal, the dose of atropia required to antagonize was 0.1 grain to 0.2 grain. In this latter case, we perceive that the range is a very limited one, extending only from a tenth to a fifth of a grain of atropia.

Successful antagonism could not be obtained above this dose; and, accordingly, three and a half times the minimum fatal quantity of physostigma (4.2 grains of the extract, or 0.42 grain of physostigmia) appears to be about the largest quantity that can be successfully antagonized by atropia, in rabbits. Beyond this point, we get out of "the region of successful antagonism," and death ensues, according to our author, "either by some non-antagonized action belonging to one or both of them, or by a combination of similar actions belonging to both."

The amount of atropia that is tolerated by the rabbit is enormous. Dr. Fraser finds that the minimum fatal dose of sulphate of atropia for a rabbit weighing three pounds is twenty-one grains. But, although this tolerance is so great, it is remarkable that so small a quantity as 0.015 grain can neutralize the minimum fatal dose of physostigma; and that 0.1 grain is capable of antagonizing a dose of physostigma equal to three and a half times the minimum fatal dose of that poison.

Another series of experiments, made with less than the minimum lethal dose of physostigma, establishes the fact that considerably larger quantities of atropia are required in order to produce death. Thus, if the dose of physostigma be one-half the minimum fatal one, the dose of atropia must amount to 9.8 grains to secure a fatal result; recovery taking place with doses ranging from 3 to 9.5 grains. This result seems singular, inasmuch as a very much smaller amount of atropia—one-tenth of a grain—will counteract the poisonous action of far larger doses of physostigma. The only explanation seems to be, "that there are certain physiological properties of both physostigma and atropia, which are not mutually antagonistic."

The only observable effect produced by these antidotal doses of atropia, when given along with physostigma, was dilatation of the pupils; though doubtless, as remarked by our author, "they must produce energetic physiological effects."

The counteracting power of atropia was found to be rather greater when it was administered before the physostigma than after it.

Another series of experiments was made to determine the effect of time upon the antagonizing power of atropia. When administered five minutes after the physostigma, any dose of atropia, ranging from 0.05 grain to 2.1 grains, will neutralize the fatal effects of one and a half times the minimum lethal dose of the former substance. When administered ten minutes after physostigma, the antagonizing dose of atropia ranges between 0.3 grain to 2.1 grains. When the interval was fifteen minutes, death was prevented by doses of atropia varying from 0.3 grain to 1 grain—a more limited range than the former. In this case, the animal was at the point of death when the atropia was administered; yet in two or three minutes, the most rapid amelioration occurred. If the interval extend beyond this, it is scarcely possible to counteract the fatal influence of physostigma at all. Another fact of interest to be noticed is, that when these two powerful poisons are administered in large doses (5 grains of atropia and one and a half times the minimum fatal dose of physostigma) simultaneously, death is the result; whereas, if an interval of twenty-five minutes occurs between the doses (the atropia being first administered), the animal recovers. This last result may possibly be explained by supposing the atropia to be partially eliminated from the system, or decomposed in the tissues.

Without undertaking to explain the precise mode in which the remarkable antagonism between physostigma and atropia is accomplished, Dr. Fraser thinks that the *fact* is indisputably proved, and certainly we can offer no argument to the contrary. In conclusion, he observes; "the existence of such an antagonism encourages the hope, that the power of directly counteracting disease is far from unattainable; and it supplies a strong incentive to efforts designed to determine the conditions of disease, and the action of remedies, with an exactitude sufficient to show how the remedial action may be applied as a counteracting influence to the diseased conditions."

Assuredly, this subject of the antagonism of poisons offers a most attractive and useful field for further investigation. In some experiments commenced by ourselves a few years ago, the results of which were published in No. CXXI. of this Journal, January, 1871, a certain number of facts seemed to be established, viz., that in the dog (the animal experimented upon), there was no real antagonism, either between prussic acid and morphia, or between atropia and morphia; that is to say, that the ascertained lethal dose of prussic acid could not be counteracted by the administration of varied doses of morphia. Neither the peculiar symptoms of the former poison were at all disguised, nor was the fatal result retarded. The same is true in reference to the alleged antagonism between morphia and atropia, at least in dogs. But, as regards the human subject, there seems to be such undoubted evidence, both in our own experience and from the testimony of others, of a real antagonism, at least in many cases, between the last mentioned substances, that we feel somewhat at a loss for a definite conclusion. One thing, however, must not be forgotten, viz., that we are not fully authorized, from our experiments upon the lower animals, even those which most nearly resemble man in their physiological relations, to predicate results upon the human subject. The enormous tolerance of certain poisons by animals (atropia, for example, by both the dog and rabbit), is of itself suggestive, at least, of caution against too hasty conclusions upon this very important subject. J. J. R.

---

## ART. XXIX.—*Recent Works on Syphilis.*

1. *Lectures and Essays on the Science and Practice of Surgery.* By ROBERT McDONNELL, M.D., F.R.S., etc. Part I. 8vo. pp. viii., 133. Dublin: Fannin & Co., 1871.
2. *Syphilis: Its Nature and Treatment, with a Chapter on Gonorrhœa.* By CHARLES ROBERT DRYSDALE, M.D., etc. 8vo. pp. viii., 165. London: Baillière, Tyndall & Cox, 1872.
3. *The Treatment of Syphilis with Subcutaneous Sublimate Injections.* By Dr. GEORGE LEWIN, Professor at the Fr.-Wilh. University and Surgeon-in-Chief of the Syphilitic Wards and Skin Diseases of the Charité Hospital, Berlin. Translated by CARL PROEGLER, M.D., etc., and E. H. GALE, M.D., etc. 12mo. pp. 249. Philadelphia: Lindsay & Blakiston, 1872.

1. THE author of the first volume on our list is already well known as an able writer and skilful surgeon, and, if the parts yet to come of his Lectures and Essays should possess as much merit as the present instalment, will, we venture to say, be accorded by common consent a place second to none as an expounder of those branches of surgical science to which his attention has been devoted. Indeed, we know of no book which in so few pages gives such a clear and just view of the pathology and treatment of syphilis as does Dr. McDonnell's: its style is moreover remarkably good, and we are disposed to think that very few readers, in laying down the volume, will not experience a feeling of regret that it is no longer. We do not purpose entering into any detailed examination of Dr. McDonnell's views, but will merely say that he is practically a dualist, though willing to admit theoretically the possibility "that the simple and the syphilitic sore may have had in past times a common origin;" that he condemns syphilization; that he has no confidence in the efficacy of the mercurial vapour bath, except as a vapour bath, believing that calomel is not absorbed by the unbroken skin; and that, while he is too sensible not to avail himself of the antisyphilitic virtues of mercury in selected cases, he is a strong advocate for the non-mercurial treatment in the milder forms of syphilis, and justly lays great stress upon the importance of hygienic measures.

As an example of the author's style, we quote from the concluding pages his humorous description of the gradual change in professional sentiment as to the uses of mercury:—

"You will perceive, gentlemen, at a glance, that since the close of the last century King Mercury has lost much of his temporal power. He, then, with the aid of a great Lieutenant-General, John Hunter, ruled despotically over three races. A great territory, a land flowing—but not with milk and honey—the land of gonorrhœa, was beneath his sway. The rest of his people, although as different in race as the Christian from the Jew, dwelt together, as we may say, in the same cities and bowed beneath his sceptre. 'Chancrelles' and 'Chancres' alike submitted to him. The first revolution deprived him forever of gonorrhœa-land. The second was the revolt of the chancrelles; this was headed by the Garibaldi of venereal revolutions, the illustrious Ricord, who, in his earlier days, had struck the last blows which had liberated gonorrhœa from the yoke of the tyrant. This second revolution may now be said to be accomplished. Ricord has won the freedom of the chancrelles. The mercurial despot of former times is now reduced to the condition (pardon me for saying it) of a *constitutional* sovereign; he reigns only over the true chancres; even among these there is an agitation going on, and a popular demagogue with wonderful powers as a 'mob-orator,' named Paul Diday, bids fair to gain great privileges, if not absolute manumission, for the section known as the 'Véroles Faibles.'"

2. We regret that we cannot speak as favourably of Dr. Drysdale's work as we have spoken of Dr. McDonnell's. The object of the author appears to have been to bring together the diverse views of as many writers as possible, and amidst such a conflict of testimony from different witnesses—all equally "reliable gentlemen"—he really seems at a loss to know what to believe; hence we find such contradictory statements as the following, viz.: "Gonorrhœa is a *special* inflammation" (page 1); "Gonorrhœa, however, is not probably any very specific inflammation" (page 2); "It is a specific disease" (page 17); and "Gonorrhœa, then, is not a virus" (*ibid.*); again, we read, "Probably six or seven cases of gonorrhœa occur to one of hard or soft sores" (page 1), and "It is for these reasons that chancres are so much more frequently received from women of the streets than gonorrhœa is" (page 2)—from a collocation of which sentences we are forced to the absurd conclusion that gonorrhœa is usually acquired from intercourse with virtuous women. Indeed upon no one point in the pathology or treatment of venereal diseases can we find that Dr. Drysdale has made up his mind; even with regard to the use of mercury, though he "has for many years treated all cases of syphilis he has met with, by means of the iodide of potassium, combined with tincture of iodine, and has in no instance employed any form of mercury," yet he still hopes "that the question may ere long meet with the careful consideration it deserves," and winds up his remarks by exclaiming "How difficult—is it not?—to arrive at sound conclusion [*sic*], with regard to the action of internal remedies, with the very best intentions."

The author's style is as exceptionally bad as that of Dr. McDonnell is exceptionally good: it is usually possible indeed to form a reasonable conjecture as to what Dr. Drysdale means, but it is comparatively seldom that a grammatical construction of his sentences conveys the idea which is evidently in the writer's mind; thus, on page 19, he tells us that Dr. Cazenave, of Bordeaux, cures retention of urine "by introducing a piece of ice about the size of a chestnut into the rectum. This [that is, grammatically, the *rectum*, but Dr. Drysdale evidently means the *ice*] is renewed, if necessary, in two hours, and is infallible, according to that gentleman." Again, on page 11, we read, "Sometimes it happens that the patient is careless; but when this is not the case, the daily passage of a bougie is often a very efficacious method of conquering the malady." But how can the carelessness of the patient impede the efficacy of the *daily* passage of a bougie?—evidently the author means that if the patient is careless he may neglect the daily use of the instrument. One more example we take, from page 9: "In some cases of painful micturition, in the acute stages of gonorrhœa, the patient is much solaced by passing water into a utensil nearly full of very cold water." But what difference can it make how full the utensil is, or how cold its contained water is, unless the patient immerses his penis therein while he is urinating?—but this we are not told that he is to do. Finally, we submit the following (page 5), as a sentence in Dr. Drysdale's most sphynx-like style, and confess ourselves unable after the most profound reflection to form the slightest conception of its meaning: "It is now well known that the cause of gonorrhœa is the urethral mucous membrane being red and injected."

If Dr. Drysdale's production has any value (which we doubt), it is as showing "how doctors disagree;" it is certainly the last book we should think of putting into the hands of any one who was desirous of obtaining any definite ideas about venereal diseases.

3. Dr. Lewin's volume has a special value as giving the results of the author's very large experience in the treatment of syphilis by the hypodermic use of mercury. Over seventy clinical histories are given in detail; and, even making allowance for a little natural enthusiasm in behalf of a method with the introduction of which the author's name is so prominently connected, the results certainly seem to warrant the conclusion that, in the subcutaneous injection of mercury, a powerful and efficient remedy has been found, with which the surgeon may hopefully combat cases of syphilis which have resisted other modes of treatment.

The preparation of mercury used by Dr. Lewin is the corrosive chloride, in solutions of three, four, and six grains respectively to the ounce of water. The injections are made with a modification of the ordinary hypodermic syringe, only fifteen minims of the solution being injected in one place, and the minimum and maximum doses for ordinary use being $\frac{1}{10}$th of a grain and $\frac{3}{8}$ths of a grain of the mercurial salt.

We have no practical experience of this mode of treatment, but should suppose, from Dr. Lewin's account of it, that it would be better adapted to hospital than to private practice, and, on account of the pain caused by the injections and the alarming symptoms of poisoning which occasionally ensue, that it would be reserved by most surgeons as a last resort, for cases of syphilis which should prove intractable to milder means.

We wish that we could say something in praise of the translators' share in the production of this work; but candor compels us to aver that the present is without exception the clumsiest and most unreadable version of a foreign book which it has ever been our fortune to meet with. Beginning their blunders on the title-page (where they call the author Surgeon-in-chief of the Syphilitic *Wards* and Skin *Diseases*), they combine, throughout the volume, German idioms with bad English and pedantic Latin, in such a way as to make their author's meaning almost unintelligible; the few notes which they have added might well have been dispensed with, while; on the rare occasions on which a note might really have been of use, no annotation is afforded.

J. A. Jr.

ART. XXX.—*Sciatica, Lumbago, and Brachialgia: their Nature and Treatment, and their immediate relief and rapid cure by Hypodermic Injection of Morphia.* By HENRY LAWSON, M.D., Assistant Physician to St. Mary's Hospital and Lecturer on Physiology in St. Mary's Hospital School. 8vo. pp. 200. London: Robert Hardwick, 1872.

THIS book is a monograph in the narrowest sense, since it is restricted, or nearly so, to the consideration not only of one form of disease, but one method of treatment. This, however, is by no means a derogatory statement, for it is certainly better to have one sure remedy, provided it is a sure one, for one disease, than a hundred doubtful. The author claims no credit for himself as an originator, but is certainly a zealous advocate, and the chief criticism to be made upon the book, with us at any rate, is that he takes a good deal of pains to prove, what most would be ready to admit, that the hypodermic injection of morphia is exceedingly useful in sciatica. We think there are few patients, in this neighbourhood at least, who would suffer, and few physicians who would allow them to do so, so long as the author seems to have done, without experiencing the immense relief, if not cure, which the subcutaneous syringe brings, and we have searched the book with some interest, but in vain, for data to determine how long ago that first injection at the hands of Mr. Ernest Hart took place, which inspired our author to go and do likewise for the relief of his fellow sufferers.

We should be doing him injustice, however, did we represent that he looks only for relief from this procedure.

He expects cure, and apparently is not disappointed. He says, with a good deal of truth, that all that is really known of the pathology of sciatica is, that it is a pain, and that stopping the pain is not relieving a symptom, but curing the disease; and who knows enough of the physiology of pain and the relations of nervous function to nervous nutrition to contradict him? He criticizes with justice both Dr. Anstie's theory of neuralgia being connected with disease of the nerve centres, as destitute of sufficient foundation, and the older and more generally held view of fluid secreted within the sciatic neurilemma on precisely the same grounds.

Part I. contains a description of the disease, with some of its accompaniments of malnutrition, anæsthesia, etc. He thinks that mistakes in diagnosis are made by a habit on the part of practitioners of looking at sciatica too much in accordance with views derived from facial neuralgia. He says that the pain is, in most cases, neither intermittent, nor sharp, acute and thrilling. Sciatica is to be diagnosticated from injury to the thigh by external violence; from hip-joint disease or rheumatism of the hip or knee; from disease or injury of the spinal cord or spine; from aneurism or abdominal tumour; from syphilitic pains; and from disease of the sacro-iliac synchondrosis.

As to causes, the author thinks there are only two direct ones, exposure of the limbs to cold and over-exertion.

He goes over a long list of remedies, which it is needless to particularize, attributing some value to tonics, smoking opium, bromide of potassium, and to counter-irritants. He attributes some virtue to the Faradic current applied by the metallic brush, which is chiefly a counter-irritant, but, although he admits that relief may be obtained from galvanism, considers its "employment in sciatica more interesting to the scientific physician than beneficial to the patient."

He comes at last to the true and, as he believes, almost the only remedy for sciatica, the hypodermic injection of minute quantities of morphia.

He uses a very concentrated solution (morphiæ muriat. gr. x, aquæ dest. ℥ij) which requires to be warmed before using. His commencing dose, $\frac{1}{6}$ of a grain, though not a large one, can hardly be considered minute. We decidedly agree with the author in preferring a smaller dose repeated, to a single large one of half or three-quarters of a grain. It is interesting to observe, that without venturing on any scientific explanation, he comes to the same practical conclusion with Dr. Mitchell, that there is less immediate relief when the morphia is injected at a distance from the seat of pain.

A number of cases are detailed, after which lumbago, which is frequently accompanied by herpes and brachialgia, is considered. The local application recommended for herpes zoster is "styptic colloid," to be painted over the vesicles as soon as they appear.

By a judicious arrangement of interesting and valuable information around the leading idea, a treatise of some size and completeness has been produced, which will, however, be chiefly useful to those, if such there are, who do not know how much power they have in their hands, or to others in preventing them from wasting time in experiments. R. T. E.

ART. XXXI.—*A Manual of Midwifery, including the Signs and Symptoms of Pregnancy, Obstetric Operations, Diseases of the Puerperal State, etc.* By ALFRED MEADOWS, M.D., London, Member of the Royal College of Physicians; Physician to the Hospital for Women, and to the General Lying-in Hospital; Honorary Member of the Obstetrical Society of Berlin. First American from the second London edition, revised and enlarged, with illustrations. 8vo. pp. 473. Philadelphia: Lindsay & Blakiston, 1871.

THIS enlargement of the first edition of Dr. Meadows's work, although still claiming the title of "Manual," assumes more the nature of a treatise, in consideration of the size of the volume, and the amount of material which it contains, its author possessing in a high degree that power of condensation which enables some men to give their ideas in small compass, without materially affecting the quality of the language used for the purpose.

We do not propose to enter upon an elaborate review of the volume, although we have read it through with much care, but will simply take up a few points which may be of interest to the general practitioner. The author says in his preface, "In the present edition I have endeavoured, without any sacrifice of its character as a student's manual, to make the work of at least equal value to the practitioner." This is manifested in various portions of the volume, by the lessons of a practical character which the author draws from his own large experience, and the observations of other writers chiefly of his own country.

It is scarcely necessary to state that the first chapter opens with an account of "the Pelvis," as this is almost universal with obstetric works; we merely refer to it for the purpose of drawing the attention of medical lecturers to the style of condensation of the author as before referred to, which may be used to advantage in the amphitheatre in the education of students. The measurements and diameters given differ slightly from those taught in our schools, but not materially, and the same may be said with regard to the fœtus, fœtal head, etc.

The histological and morphological portions of the Manual are comprised in 32 pages, upon the development of the ovum, and the gravid uterus, with illustrations from Valentin and others; and present in simple language the views of modern physiological investigators, such as those of Wagner, Carpenter, Valentin, Farre, Kölliker, etc., with comments and conclusions of the author.

In the chapter upon the Signs of Pregnancy Dr. Meadows remarks touching the value of the *placental bruit:* "Care is required, however, not to attribute too much importance to this sign, for the same sound may be heard either directly from the aorta, or vena cava, or indirectly, by being transmitted through any solid body pressing upon those vessels, as in the case of uterine or ovarian tumours. I have often heard it in both of these conditions, when pregnancy did not exist." He holds to the views long since expressed by Stoltz and Cazeaux, and more recently by Prof. Hodge, that the shortening of the cervix uteri is apparent and not real, the neck being increased in its lateral diameter, without any appreciable diminution in vertical length. Prof. Hodge says:[1] "We have for years placed but little confidence in the length of the neck of the uterus as diagnostic of the stage of pregnancy." Dr. Meadows, from his own experience, has been led also to place very little reliance, except as corroborative evidence, in "mammary signs," so called. He also holds a very low opinion of the value of kyesteine, which recent investigations under the microscope have shown to be irregular in composition, and very similar to pellicles found on the urine of non-pregnant women, and even of men. We have repeatedly tested the value of this sign in young, healthy married women suspecting themselves pregnant from the fact that their menses had ceased; and in nearly every instance in *such subjects* it has proved to be a reliable sign, although we were always very guarded in expressing a positive opinion based upon it. Its chief value is as an early presumptive evidence.

In the chapter upon the Duration of Pregnancy, the author remarks: "We should always be careful to distinguish between the period of sexual congress and the date of conception. . . . This uncertainty as to when conception follows in any given case is that which doubtless gives rise to much of the apparent discrepancy in the term of gestation. . . . In some cases the spermatic fluid may come almost immediately in contact with the ovum, and impregnate it; in others it may travel along the Fallopian tube, and, retaining its vitality, remain perhaps several days before it meets the ovum to fertilize it." Under this hypothesis a discrepancy of a few days might be accounted for, but what determines the difference between the common period of 280 days, and the various subsequent dates extending, as in the case reported by Prof. Hodge to 330 days after the cessation of the menses? In one case well known to the reviewer, the lady, who suffered with ovarian dropsy, gave birth to a living fœtus ten months after the departure of her husband for Europe.

On the subject of extra-uterine gestation, Dr. Meadows, for convenience of division, gives but four varieties, in correspondence with those of Prof. Hodge, and including the ten forms of Moreau, which are of little advantage and only complicate the study. As the fœtus will always be found either in the wall of the uterus, the Fallopian tube, the ovary, or peritoneal cavity, names given in correspondence should be sufficient, however minute we may be in describing the peculiar connections of the ovum.

Upon the treatment of abortion the author remarks: "Pain and uterine action are synonymous terms, and it is doubtful whether there be any means of arresting uterine action when once it has fairly commenced. Dr. Tanner believes that it is quite possible to arrest this action by the aid of opium. . . . I must confess that I have never been so successful." This has not been the experience of the reviewer, who upon one well remembered occasion succeeded in arresting an abortion at 4½ months by the use of morphia, when the patient had marked recurrent uterine pains following a considerable discharge of blood, and returning at longer and longer intervals for ten hours, until the uterine action was controlled by the remedy. The lady was delivered of a living female child at full term.

---

[1] System of Obstetrics, page 49.

Prof. Hodge remarks (*op. cit.*): "The fœtus has often been preserved, even when there have been severe hemorrhage and contractile pains; although under the circumstances expulsion generally results."

Dr. Meadows believes that in labour, uterine contraction commences at the fundus of the organ, and says, page (161), "it extends downwards like a wave till it reaches the cervix, when it returns again to the fundus, keeping the entire uterus, for the time being, in a state of firm contraction: after a time, . . . this action passes off and is followed by a period of perfect rest" (page 162). "I am fully satisfied, both by fact and reason, by experience as well as by theory, that the view here given is the correct one."

In describing the mechanism of parturition, Dr. Meadows follows the teachings of Prof. Nægelé, of Heidelberg, in reducing all presentations of the head to those of the cranium and face; a plan which, while it simplifies the method of instruction, is believed by Prof. Hodge and our teachers generally to carry this simplification too far, and to necessitate the reference to deviated positions of the cranium or vertex. In the language of Dr. Hodge: "As experience proves that many of these deviations are not only productive of delays and increased sufferings, but also that they remain persistent, and thus involve the welfare and even the life of the infant and its mother, we conceive it far better to examine in detail each of the so-called deviated presentations, in order that the complications thus resulting may be well understood, and scientifically treated." In reference to this question, the *Glasgow Medical Journal*, October, 1864, says: "The great attention which the author has devoted to the mechanism of parturition (referring to Dr. Hodge's work), taken along with the conclusions at which he has arrived, point, we think, conclusively to the fact that, in Britain at least, the doctrines of Nægelé have been too blindly received."

With regard to the instruction given upon the forceps, we have only to remark that the character of instruments used and recommended, viz., the long English forceps, the non-crossing ones of Prof. Lazarewitch, of Russia, and the double-curved of Dr. Aveling, are so different from those generally employed here, that they do not correspond either in character, mode of application, or adaptation to the Hodge, Davis, or Wallace forceps, which were all designed to fit, and be applied to the sides of the child's head wherever possible, no matter what may be its relations with the pelvis. In the two illustrations given, the short forceps are being applied to the *sides* of the fœtal head in an occipito-anterior position of the vertex at the inferior strait; and the long forceps in a first position of the vertex at the superior strait, with the blades over the sides of the forehead and occiput. We have, it is true, many obstetricians who use forceps corresponding with the English, Edinburgh, and German instruments, such as those of Bedford and Elliott of New York, which are much employed in that city, and by those whom they have instructed; but, under the more modern use of the forceps, as an aid to feeble women to assist in their delivery, prevent exhaustion, and shorten the period of suffering, as employed by the most careful obstetricians in Philadelphia, there is no instrument, in the opinion of the reviewer, comparable with that of Davis, or the various modifications which have been founded upon his form of blades, intended to embrace the parietal protuberance and act as tractors with moderate compression, and no risk of cutting the fœtal scalp. One of our most successful obstetricians, now deceased, informed me that he had not lost a case in labour, or from the immediate effects of labour, in thirty years, and that he had used, during much of this time, either a Davis short forceps, or a modification of it with long handles, in about one out of every seven cases of labour. His rule was, not to allow a lady to suffer any longer than was absolutely necessary after her os uteri was dilated. If she was strong, and the position favourable, he did not interfere; if delicate and weak, he used the forceps, and, with them applied, carried the head through flexion, rotation, and extension as an assistant to the uterine and abdominal forces, until the perinæum had slipped over it. We cannot see how, with the forceps applied to the sides of the pelvis, we can thus imitate nature in this class of cases so common in the upper walks of life in our large cities. We may deliver, it is true, but the instruments are apt to slip, and are more likely to do injury to the fœtus and perinæum.

The chapter upon Turning is quite a full one, covering twenty pages, and illustrated with eleven wood-cuts; it is fully up to the times in all the processes by which this change of position is effected.

With regard to the Cæsarean operation, the author remarks: "The earliest record of this operation dates as far back as 508 years B.C." This is new to us, and we regret that he did not quote authorities in proof, for, the more we have looked into this question, the more doubtful does the extreme antiquity of the operation appear; the statement seems to rest almost entirely upon a Hebrew word *dophan*, of very uncertain meaning. With the exception entered, we have no remarks to make upon the chapter, except to recommend its perusal to any one who takes an interest in the subject. Dr. Meadows is an advocate for the operation, notwithstanding its unfortunate record in his own country, and gives strong reasons for the ground which he has taken. He has fallen into one error by coupling British and American results together, and stating that more than two-thirds of the mothers have died, whereas the true statement for this country is, that, out of 62 women operated upon, 31 have recovered, with a saving of 29 children. The fact is, that British mortality is so fearful, that it is only by studying the results in other countries that any of their obstetricians have been led to advocate the operation.

We do not see the necessity of introducing into a "Manual," the no longer employed operation of Sigault, which is simply a historical curiosity.

The chapters upon Craniotomy and Cephalotripsy are very full and complete. Of his own experience, Dr. Meadows says (page 270): "It has been my misfortune to have used the perforator sixteen times; fourteen times it was applied to the head, and twice to the chest and abdomem. Of these, fourteen mothers recovered, two died." In one of those who died, he advocated the Cæsarean operation, but consent could not be obtained. Dr. Meadows is opposed in opinion to Dr. Barnes and others in Great Britain, who advocate cranioclasm to an extremity of pelvic deformity, which, in the judgment of many, renders the operation even more hazardous than the Cæsarean section, without the redeeming feature of possible safety to the child. He limits the available space for craniotomy to a minimum of 1¾ inches.

The balance of the volume treats of unnatural labour from abnormal conditions of the expelling power; of the passages; and of the child; complex labour from prolapse of the cord; retention of the placenta; hemorrhage; puerperal convulsions; rupture of uterus, bladder, perinæum, etc., and inversion of the uterus; and puerperal diseases, viz., phlegmasia dolens, puerperal mania, and fever. These articles are well written, practical, and of great use to the practitioner, giving evidence of large experience, and a closeness of observation on the part of the author.

The American edition is in clear, excellent type, well illustrated, and presents a very creditable appearance. We cordially recommend the work as one of ready reference upon many practical points in obstetrics.

R. P. H.

Art. XXXII.—*The Origin of Cancer: considered with reference to the Treatment of the Disease.* By Campbell De Morgan, F.R.S., Surgeon to the Middlesex Hospital. Small 8vo. pp. vi., 87. London: J. & A. Churchill, 1872.

This little book, which is in part reprinted from the pages of the *Lancet*, contains a well-reasoned and well-written argument in favour of the "local origin" theory of cancer, which, as our readers may remember, was so ably advocated by the late Mr. C. H. Moore. Mr. De Morgan admits that there may be an inherent or constitutional tendency to cancer, just as there is often observed an inherent tendency to warts, or to fatty or sebaceous tumours, but denies that cancer is at its beginning a constitutional or blood disease, and maintains that it is at first as strictly a local affection as other forms of tumour, or as the variety of keloid seen in cicatrices. The author's remarks upon the modes of dissemination of cancer are well worthy of attention. As an indication of the existence of general contamination, the presence of *sciatic pain* is particularly referred to. "The fact," says Mr. De Morgan, "was pointed out to me by the late Dr. Ferguson, many years ago, and of its truth I have had abundant proof. Why it should be so, I do not know; sometimes it appears to be connected with that softening of the iliac bones, which we find in cancerous patients."

The author properly insists upon the important bearing of the theoretical views entertained as to the origin of cancer upon the modes of treating it: if it is considered a blood disease, "we must strive to find some corrective to the constitutional taint, or to the blood-poison," but if its local origin be admitted, the hope of safety evidently lies in early and complete removal. His plea for early operation seems to us so well founded and so forcible, that we cannot do better than quote it:—

"Given a defined tumour in the breast of a woman over thirty, and, however negative other signs may be, sooner or later we may be sure that an operation will be required. There may be cases of general or partial enlargement of the breast, with pain and hardness, which, while in the end they may prove cancerous, yet may result from simple chronic irritation, and which subside under proper treatment; such cases it will be right to watch. There may be cases in which a lump in the breast presents characters which leave a surgeon in doubt as to whether he has to deal with a tumour, or a deep abscess, or a cyst. Here exploration may be necessary, and if this reveal the existence of abscess or cyst, simple evacuation of the contents may be all that is required. But, if tumour be undoubtedly present, such as sarcoma, or colloid, or adenoma, it is true that no harm might come from waiting, though no good would be done. But suppose it to be cancerous; what irreparable mischief may not ensue from delay? To-day the glands may be free; to-morrow they may be infected; not to such an extent as to attract notice, but not the less to be the nidus of future cancer growth. To-day all existing disease may be within the range of our operation; to-morrow, disease may be distributed far beyond. Yet, what is more common than for a surgeon, when a patient has pointed out to him 'a lump' in her breast, and he has found that she is in good health, that there is no puckering of skin or retraction of nipple, and that the glands in the axilla are not enlarged, to assure her that she need not be uneasy, but that she should watch the swelling, and apply ointments, lotions, etc. A month or two afterwards, perhaps, she is seen again; and then there is adhesion of skin, and a small, hard gland in the axilla. What does this puckering of skin, etc., imply, save that the influence of the disease, or rather the disease bodily has been spreading in all directions, and that possibly it may have extended beyond reach, even if it could be detected. Are the chances of success equal under these altered circumstances? I shall believe that only when I find that leaving behind a visible piece of cancer structure in an operation is of no consequence. . . . I should say, then, that in the case of a doubtful tumour, the surgeon ought not to wait till its true character has revealed itself; but that he should proceed forthwith to ascertain its nature by exploration, and be prepared at once to remove it if it turn out to be cancer, or any disease likely to become serious. He would save his patient much risk and much anxiety."

In taking leave of Mr. De Morgan's little volume, we most cordially commend it to the attention of our readers. J. A., JR.

---

ART. XXXIII.—*Lectures on the Principles and Practice of Physic. Delivered at King's College, London*, by Sir THOMAS WATSON, Bart., M.D., F.R.S., Fellow and late President of the Royal College of Physicians in London, etc. etc. In two volumes. From the fifth revised and enlarged English edition. *Edited, with Additions and numerous Illustrations*, by HENRY HARTSHORNE, A.M., M.D., Professor of Hygiene in the University of Pennsylvania, etc. 8vo., vol. i. pp. 880; vol. ii. pp. 963. Philadelphia: Henry C. Lea, 1872.

THE first edition of these lectures was published in 1843, and, although since that time there has been almost a revolution in medical thought, they still maintain their popularity. Nor is this to be wondered at, for not only is Sir Thomas Watson one of the most agreeable and elegant writers in our profession, but there is abundant evidence in every part of the edition we are called upon to notice, that he is fully alive to the necessity of keeping himself abreast with the present condition of medical science. There are, it is true, a few subjects which seem to us rather superficially treated. This is without doubt partly owing to the difficulty which every one must experience who attempts to compress into two volumes all that is comprehended in the title of the Principles and Practice of Medicine. There are, however, some of the lectures the deficiences of which cannot be fully explained in this way. For instance, the chapters on inflammation, although improved by the additions of the accomplished editor, are not equal to those on the same subject by Professor Wood in our own language, and of M. Jaccoud in the French language. Again, in the lectures on jaundice Dr. Watson makes no allusion to the theories of Frerichs and Murchison as to the origin of those cases of icterus in which the discoloration of the surface cannot be traced to reabsorption of bile. The explanation of these cases has always given trouble to pathologists, but there are few who will agree with the author that they always depend upon a conversion of the colouring matter of the blood into that of the bile. While admitting, however, with Dr. Hartshorne, that these lectures are not, and were not intended to be exhaustive, few readers will dissent from his opinion that they present "the most lucid and interesting exposition of the Practice of Medicine, in the light of careful research and large experience, which our language affords."

It is a pleasure, moreover, to find one who has attained the advanced age and prominent position of Dr. Watson ready to subject new theories to careful study and consideration, and willing to acknowledge that methods of treatment previously recommended by him are objectionable. Thus, when speaking of mercury as a remedial agent, he says, quoting words that he had formerly used, "the great remedial property of mercury is that of stopping, controlling, or altogether preventing the exudation of coagulable lymph ; of bridling adhesive inflammation ; and if we in our turn could always bridle or limit the influence of mercury itself, it would be a still more valuable resource." This statement of the special properties of the drug, he thinks, can no longer be maintained in the full and unqualified sense of the words just cited, and we, therefore, find him placing restrictions upon its use, and recommending its employment principally in the treatment of those diseases in which there is reason to believe that the inflammation takes its origin in syphilitic infection.

It is, of course, impossible within the limits of a brief notice to lay before our readers the general plan of the work, and this indeed is not necessary, as it does not differ from that of former editions, and seems to have been adopted by the author simply because it was the most convenient. The additions made by Dr. Hartshorne are always inclosed within brackets, so as to leave the text otherwise unaltered. He has, we think, wisely retained many of the comments and additions of the editor of the previous American editions, wherever this could be done with justice to the present state of medical opinion and experience. The most extended articles by Dr. Condie are upon remittent fever, yellow fever, cholera infantum, and cerebro-spiral meningitis. Dr. Hartshorne has commented at the greatest length upon medical thermometry, the pathology of croup, the causation and prevention of yellow fever and cholera, but the frequent occurrence of the brackets, above alluded to, furnishes sufficient proof that every part of the work has been carefully revised. Unquestionably it has been very much increased in value by the thorough revision it has received, and many of the deficiencies of which the author himself seems to have been aware (if we may judge from a remark which he makes in the epilogue), have been thus supplied, but we cannot help regretting that the editor has not chosen to have recourse, in some instances at least, to foot-notes rather than to interpolations in the body of the text, especially in cases where his opinions are more or less opposed to those of the author. The most noticeable instance of disagreement between the two is in regard to the pathology and treatment of cholera. The latter has adopted Dr. George Johnson's theory of the nature of the disease, and is consequently a warm advocate of the eliminative plan of treatment ; the former justly regards this theory as too exclusive, and the treatment the worst that can be instituted, and proposes to combat this formidable enemy of our race with the frequent administration of minute quantities of the diffusible stimulants.

Dr. Watson is to a certain extent a convert to the doctrines of Niemeyer as to the nature of phthisis, and the relations which this bears to tuberculosis. The fact that he is so is a sufficient answer to the assertion, which was made by an author whose book we recently noticed in this Journal, that physicians of age and experience were always adherents of the older views. The editor is willing to acknowledge that phthisis is occasionally of inflammatory origin, but does not fully accept Niemeyer's opinion "that tubercle is always a secondary formation, dependent on *resorption* of the products of inflammation in the lungs or in other parts." This, he thinks, is opposed by some important considerations. "For instance," he says, "what we call scrofulous caseous degenerations of the lymph-glands and bones are very common in children; yet pulmonary tuberculization does not follow in a large proportion of such cases. Again, broncho-pneumonia, or catarrhal pneumonia is decidedly more frequent in children than adults, but phthisis is much more common (as it ought not to be according to the views of Buhl, Virchow, Oppolzer, and Niemeyer) after the age of fifteen than before it." We do not look upon these objections as entirely unanswerable, although they certainly have some force. There is unquestionably a close connection between suppuration and the occurrence of pyæmia, and yet no one would contend that this relationship did not exist, because there are many cases of suppuration in which no pyæmic symptoms are at any time set up. In the same way, although we incline strongly to the view which makes tuberculosis a sequel of the absorption of caseous products, we are ready to admit, with Dr. Hartshorne, that pulmonary tuberculization does not invariably take place in individuals who are the subjects of scrofulous enlargement of the lymphatic glands. As regards the relative frequency of catarrhal pneumonia in children and adults, there appears to be good reason for thinking that the disease occurs oftener in the latter than is generally supposed, and that a part of the immunity from the sequelæ of this disease, which the very young enjoy, is due to their great recuperative power, and to the fact that they are generally carefully guarded from exposure during and subsequent to the attacks.

We can well understand, from the perusal of these lectures, the great popularity of Dr. Watson as a teacher. He evidently possesses the faculty, and we regret that it is not more common, of investing every subject he discusses with interest, and we consequently know of few books of the same scientific value which are really so pleasant to read as these lectures. Few writers, moreover, excel him in power of description, and the intelligent student of medicine who selects this as his text-book, will find the outlines of the various diseases so clearly traced that he will rarely fail to recognize them when he meets with them in practice. The directions in regard to treatment are also excellent. Without being at all dogmatic, Dr. Watson tells us how he would treat the different forms of disease, which, we think, is an infinitely better plan than that of puzzling the student with a review of the methods of treatment recommended by various authors, and leaving him in the end uncertain how to act in an emergency.

J. H. H.

ART. XXXIV.—*Ueber fremde Körper im Ohre, und eine sichere und gefahrlose Methode, dieselben zu entfernen.* Von Dr. LÖWENBERG in Paris. Separat Abdruck aus der *Berliner Klinischen Wochenschrift*, 1872, No. 9.

*Foreign Bodies in the Ear, and a Sure and Safe Method for their Extraction.* By Dr. LÖWENBERG, of Paris. (A reprint from the *Berlin Klinische Wochenschrift*, 1872, No. 9.)

IN this paper Dr. Löwenberg describes a method of extracting foreign bodies from the ear, devised and called by him the agglutinative method.

The writer assumes that the vast majority of practitioners of medicine and surgery are unable to use the ordinary instruments for extracting foreign bodies from the ear without injury to the patient, and narrates many cases to prove that not only the patient suffers more from the attempts at extraction, but that it not infrequently happens that the surgical interference has been applied to the wrong ear, and states that children have been brought to him with the right ear inflamed as the result of manipulation on the part of friends and in-experienced surgeons, while the foreign body was lying unnoticed and harmless in the left ear.

In most cases of foreign body in the ear, the author thinks that all instrumental endeavours may be excluded from the treatment, and that the general practitioner can confine himself with the best results, to the use of injections of warm water by the syringe, or, as a last resort, adopt the agglutinative method.

In any case where the foreign body has been in the ear for some time, and inflammatory symptoms have manifested themselves either in consequence of the presence of the foreign body or violent endeavours to extract it, we should satisfy ourselves at the outset of our treatment whether a perforation in the membrana tympani exist. If the membrane is perforated, the stream of water from the syringe may force the foreign body into the cavity of the tympanum, an accident greatly to be deprecated but which Dr. L. has had happen to him.

If, then, a perforation of the membrane is present, the agglutinative method is especially adapted to aid our efforts at removal of the foreign body from the meatus auditorius.

The author says, it is especially important to work with proper material, and the *preparation* of the adhesive mass plays a most prominent part in the treatment. First dissolve some good cabinet-maker's glue in a minimum amount of water. If these preparations can be made the day previous to the operation, it is advisable to put a small quantity of water to the glue, and let it stand till just before the operation, then warm it over a water-bath till the water is well driven off and the mass is almost solid. The brush for applying the glue is made by binding a small strip of old linen to a little stick, say a match, and unravelling a few millimetres of the edge of the linen band, which projects beyond the end of the stick. Then dip the point of the brush into the glue, without touching the side of the brush, and place it in contact with the foreign object, letting the pencil fall against the object rather than forcing it against it.

Before the operation the patient should lay his head upon the arm of a chair or sofa, and he must remain three-quarters of an hour in the same position, till the glue becomes hardened. Very gentle traction will then remove both instrument and foreign body. If the object to be extracted is a needle or a pin, the side of the charpie pencil may be smeared with the glue.

The author thinks this method could be applied to cases where the foreign body has entered the cavity of the tympanum through a perforation in the membrane. In cases where the foreign body is moist, it should be made as dry as possible. If this cannot be done, glue may be abandoned and small quantities of plaster of Paris, or any cement which hardens in the presence of water, substituted.

The author says that Celsus (Lib. vi. Cap. 7) advocated the use of adhesive mixtures in the extraction of foreign bodies from the ear.

In modern times Triquet and Voltolini have used such mixtures for the same purpose. The standard works on the ear of the present day do not mention the subject, with the exception of that of Rau, in which it is disregarded.

The author closes with the hope that his colleagues will not forget the method he advocates, especially in those critical cases where the foreign body entirely fills the meatus auditorius or has become imbedded in it. In just such cases it is most easy as well as important to use the agglutinative method, and avoid the use of all instruments devised for the extraction of foreign bodies, which, it is true, may be useful in skilful hands, but in the majority of cases lead to serious complications. C. H. B.

ART. XXXV.—*On Winter Cough, Catarrh, Bronchitis, Emphysema, Asthma: A Course of Lectures delivered at the Royal Hospital for Diseases of the Chest.* By HORACE DOBELL, M.D., Senior Physician to the Hospital, etc. New and enlarged edition, with coloured plates. 8vo. pp. 230. London: J. & A. Churchill, 1872.

DR. DOBELL has rendered himself rather notorious of late by the pertinacity with which he has advocated the use of the pancreatic emulsion, his own invention, in the treatment of consumption. The invention, if we may so call it, was the natural result of the theory which originated with him, that phthisis consists principally and primarily in a derangement of the secretory function of the pancreas, in consequence of which it is prevented from taking its proper part in the emulsification of the fatty articles of food. This theory of the pathology of the disease which seems to be as little supported by scientific observation as any with which we are acquainted, has not, we believe, been adopted by a single physician of distinction, and the marvellous effects of the remedy, claimed for it by Dr. Dobell, have been witnessed by few besides himself.

The book which we are called upon to notice to-day has rather an objectionable title, inasmuch as it is one calculated to attract the attention of the non-professional quite as much as that of the professional reader. Indeed we suspect it was chosen partly for that purpose, for not only is the book written in rather a popular style, but claims to unusual skill in the treatment of winter cough are rather freely made in it.

Notwithstanding the prominence, however, that has been given to "Winter Cough" in the title, a large part of the book is devoted to the discussion of emphysema. Of the various theories of the nature and origin of this condition, Dr. Dobell prefers what is known as the "Expiratory Theory," which, he thinks, is applicable not merely to those cases in which cough has been a marked and persistent symptom, but also to that class of cases, the explanation of which has generally puzzled pathologists, because there has been at no time evidence of any interference with the expiration. A careful inquiry into the history of such cases, he says, will generally disclose the fact that they have suffered, or are still suffering from thickening of the mucous membrane of the naso-pulmonary tract. When this is the case, a very slight interference with the expiratory act, such as occurs in sneezing or in blowing the nose, will be sufficient to produce distension of the air-cells of the lungs. Although fully inclined to agree with Dr. Dobell that the majority, if not all cases of emphysema are better explained by the expiratory theory than by any other, we do not think that its general adoption by the profession is as much owing to his advocacy of it as he seems to intimate.

Emphysema is a condition which is not so likely to give rise to cough as the bronchitis which was its cause, and which is its almost constant accompaniment. In patients whose cough cannot be attributed to this cause, Dr. Dobell believes that a careful examination will detect one or other of the following diseases. 1, post-nasal catarrh; 2, chronic recurrent laryngeal catarrh; 3, ear-cough;[1] 4, follicular disease of the pharynx; 5, superficial inflammation and serration of the edges of the soft palate; 6, elongated uvula, becoming relaxed and œdematous with every fresh attack of cold. Some pages are devoted to the second and third of these conditions, but the others are passed over without special notice.

---

[1] By ear-cough is meant a cough produced by a reflected irritation, originating in a hyperæsthetic condition of the nerves distributed to the various parts of the auditory apparatus.

Dr. Dobell expresses, in the preface to the second edition, his due sense of the compliment a large number of his professional brethren have paid him in consulting him in reference to their own "winter cough," having been led to do so by reading his papers on the subject. We, therefore, turned with some interest to those chapters of the work in which the treatment of this affection is discussed, but we have been unable to find in them anything very novel. The medicines recommended are those in general use in the management of bronchial inflammation, with which and with their therapeutic uses the physicians who sought relief at his hands must have been perfectly familiar. A formula of a prescription is indeed given, which is asserted to have such wonderful power in arresting a cold at its beginning, that it is known among some of the Doctor's patients as the "Magic Mixture." We take it for granted that our readers, like ourselves, would be very glad to have the power always of keeping a commencing catarrh under their thumbs, and therefore give the description of his treatment in the author's own words: "Give five grains of sesquicarb. of ammonia, and five minims of liquor of morphia in an ounce of almond emulsion, every three hours. 2. At night give ℥jss of liq. of acet. of ammonia in a tumbler of cold water, after the patient has got into bed and been covered up with several extra blankets; cold water to be drunk freely during the night should the patient be thirsty; 3, in the morning, the extra blankets should be removed so as to allow the skin to cool down before getting up; 4, let him get up as usual, and take his usual diet, but continue the ammonia and morphia mixture every four hours; 5, at bedtime the second night give a compound colocynth pill. No more than twelve doses of the mixture from first to last need be taken as a rule; but should the catarrh seem disposed to come back after leaving off the medicine for a day, another six doses may be taken, and another pill. During the treatment the patient should live a little better than usual, and on leaving it off should take an extra glass of wine for a day or two."

Cases of post-nasal catarrh are to be managed by a combination of medicated injections, medicated snuffs, medicated lozenges, and rubefacient liniments, into the composition of all of which except the first camphor enters largely.

In addition to its other faults there is a good deal of repetition throughout the book, sufficient of itself to sink it even if it had more merit than it actually has. Great care has, however, evidently been taken with the statistical portion of the work, and the two plates illustrative of morbid conditions of the lungs which have been introduced into this edition are well executed.

Two new chapters have been added by the author, one "On the natural course of neglected Winter Cough, and on the interdependence of Winter Cough with other Diseases;" the other "On Change of Climate in Winter Cough." Fresh matter has been inserted under the heads of "Ear Cough," "Post-nasal Catarrh," "Laryngoscopy," "Artificial Respiration," and "New Instruments and Methods of Treating Emphysema of the Lungs." J. H. H.

---

Art. XXXVI.—*Consumption and the Breath Rebreathed. Being a Sequel to the Author's Treatise on Consumption.* By Henry MacCormac, M.D., Consulting Physician to the Belfast General Hospital. Pamphlet, pp. 154. London: Longmans, Green & Co., 1872.

"The theory set forth in these pages is calculated," the author gravely informs us in the preface to this essay, "to shed a light on the phenomena of tubercular consumptive disease, which the last two thousand years have failed to do. Never," he goes on to say, "were these phenomena rendered thus intelligible before." The theory whose claims to consideration are thus modestly stated, is simply that the various conditions known as scrofula, tuberculosis, and phthisis have but one cause, and that is the "respiration of air already breathed." Inasmuch as Dr. MacCormac seems disposed to complain of his reviewers, and we are anxious not to do him injustice, we will let him speak for himself.

"The *raison d'etre*, then, the only one of phthisis, is the habitual infringement of the great natural law which prescribes that we shall at no time breathe air deficient in oxygen, or any portion of which has been fouled by prior acts of respiration. Other than such fouled and halting air, coupled with its habitual inhalation, there is no actual or possible source of phthisis, and I believe in none. The detritus of degradation, speaking of the dead unoxidized carbon, remains, under such circumstances, more or less within, instead of being thrust beyond the precincts of the living, breathing organism. The only means of explaining what becomes of it besides in assuming its conversion into, and, in fact, identity with tubercle. The effete, unoxidized carbon, then, is tubercle, while, conversely, tubercle itself is no other than the effete, unoxidized carbon. One condition of things, to wit: the habitual respiration of already breathed air having begun, the sequence of the other, namely, the deposit of tubercle, follows as a matter of necessity. Reciprocally and reciprocally, they explain and account for each other perfectly."

This is undoubtedly the strongest argument in favour of ventilation with which we are acquainted; but unfortunately, as has already been pointed out by an intelligent critic of Dr. MacCormac's views, we certainly see phthisis in persons and families who, as regards the breathing of fresh air, are more favourably circumstanced than other persons and families in whom it is not developed. Still less does this theory account for the occasional occurrence of tubercle in the fœtus, which has never breathed at all—an objection to his theory which Dr. MacCormac, it is true, appears to see, but does not meet very satisfactorily.

Assuredly the repeated inhalation of a "pre-breathed" air is among the most powerful of the predisposing causes of phthisis; and amid the turgid writing of this essay may be found good arguments in favour of the more efficient ventilation of our dwellings by night, as well as by day, and in favour of a life spent as much as may be in the outer air. Had Dr. MacCormac attempted to prove no more than this, avoiding the bombast which disfigures his pages, and punctuating his sentences according to the rules observed by less pretentious mortals, he would have done a good work, which would no doubt have been appreciated, and would have avoided the ridicule which has greeted him as the self-constituted equal of Newton.

We have already made liberal extracts from the book; we cannot, however, forbear adding to them two others. The first, as the specimen of the author's style and punctuation; the second, because it may possibly gratify our eastern friends. "I would speak in especial of a chamber which I once entered, as I had often before entered it, early one winters morn. It was the sleeping closet of my son. His low trestle-bed stood betwixt the severally widely open window and door, while the keen but exquisitely fresh sweet atmosphere from windswept hills careered through the apartment ceaselessly. The hue of exuberant health mantled over the boys every feature while, bordering the margin of the coverlet, there extended a fringe of pure white snow which the genius of the fragrant night had wafted in all harmlessly during the hours of my childs repose." "The φύσις of the Indian indeed is for the most part quite admirable, whereas such lank sallow hollow-checked flat-chested hipless tooth-decayed men and women, as I too often encountered in that newer England, I never saw before or wish to see again."

J. H. H.

# QUARTERLY SUMMARY

OF THE

# IMPROVEMENTS AND DISCOVERIES

IN THE

# MEDICAL SCIENCES.

---

## ANATOMY AND PHYSIOLOGY.

1. *Investigations on Low Organisms.*—In our preceding No. (p. 244) will be found an account of some interesting investigations by Prof. Rindfleisch, of Bonn, on this subject. The learned professor has continued his researches, and published the results in *Virchow's Archiv.* for March last. These experiments have even greater scientific interest than the previous ones. His present researches have reference to the origin of those lower organisms which appear in decomposing substances, and to which the author applies the name schizomyceta, including vibrios, bacteria, zoogloea, etc. In reference to these bodies, the great question is, Do they attach themselves to putrefiable (but not yet putrefying) substances, and, by their vital processes, induce the putrefaction of these substances? or, on the other hand, are they merely the results of putrefaction, the substances first decomposing, and so affording a fit medium for the development of their organisms, which arise by equivocal generation from the decomposing body? The author, it may be remarked once for all, used the greatest precaution in conducting his experiments, the metal instruments which he used were always, immediately before using them, heated to a red heat (superheated) and the glass slides, etc., first steeped in absolute alcohol, and the alcohol got rid of by burning it off in the flame of a lamp. The substance experimented on was a minute portion of the muscle of a freshly killed animal, removed with the precautions referred to, placed in distilled water on a glass slide, and examined with an immersion lens. He found very soon that a number of granules appeared, which possessed a rapid motion; that these after a time adhered to some part, the free end or head hanging loose in the fluid. This end increased in length and thickness, so as to form a club-shaped body, and by and by the head of the club became separated from the handle by a groove so as to form two joints of a chain. By repetition of this process a chain was formed of considerable length, and consisting of numerous joints. Each joint seemed to possess the power, so long as it retained its position, of dividing into a number of smaller members, and, contrariwise, neighbouring joints seemed to have the power of resolving into a single large one. The chain so formed then may break up, each joint forming an individual bacterium, which possesses a spontaneous power of motion, and is hence considered by the author to be animal in its nature. Sometimes these bacteria collect together into groups, and come to a state of rest, forming what Cohn has named zoogloea, but these are not to be looked on as the source of the bacteria. Coming to the naked eye appearances of decomposing substances, the thin scum which grows on such fluids is due to the interlacing

chains described above, these chains hanging down into the fluid and giving off the individual bacteria. In addition to bacteria, the author found in his experiments the organism named micrococcus, which he considers the lowest vegetable form, as the bacterium is the lowest animal. The micrococcus does not possess voluntary motion, and has no relation whatever to the bacterium. At this stage, and before considering how the questions started at the outset are to be answered, the apparatus used is described. A glass slide the size of stage of the microscope is taken, and a square piece of an ordinary glass slide attached to it with Canada balsam. Around this latter is placed a piece of blotting paper, which communicates with a vessel outside containing water, and finally the cap of Recklinghausen's moist chamber is placed over the slide. The piece of muscle is placed on the square glass slide and covered with a cover-glass fitted with wax as described in the former paper.

Now as to the origin of these lower organisms. He found that they appeared in the fluid after two days, when he had used distilled water and taken the greatest precautions against the admission of dust. He found, however, that, on using ordinary spring water instead of distilled water, the development was much more rapid and the organisms more abundant, and this set him to consider whether distilled water may not have picked up after its distillation the germs of these organisms, or whether the germs are actually destroyed by boiling, the experiments of Cohn rendering it probable that certain organisms do survive boiling heat. He, therefore, determined to repeat the experiment, taking greater precautions that the water was not contaminated. A glass slide, which had been most carefully prepared as above, was held over a vessel containing boiling water, and the condensed steam collected into a drop by a piece of platinum wire which had just been superheated. When this water was used for the experiment instead of ordinary distilled water, "even after weeks, no schizomyceta appeared." The germs of these organisms had therefore in the former experiments been picked up by the distilled water. That these germs had been derived from the contact of the distilled water with the earth, and not from the air, was proved very sufficiently by the following. Portions of meat from a newly-killed animal were placed (with the usual precautions) in open-mouthed glass bottles, and exposed outside the house to the sun and rain. The rain came down, doubtless carrying with it all the solid impurities of the atmosphere, and was succeeded by heat. But, though this decomposable substance was thus exposed to all the atmospheric conditions of putrefaction, and though fungi grew in it in considerable abundance (their spores floating in the air) yet no bacteria were developed and no odour of putrefaction. This took place while other preparations which had simultaneously been made with ordinary distilled water swarmed with bacteria. The conclusions from these facts are obvious; no putrefaction occurs without these organisms, and they are therefore the causes of putrefaction and not the results; their germs must be communicated to the decomposable substance before it putrefies, and these germs are derived from the earth and not from the air; these organisms cannot arise from fungi, for here were all the other conditions of putrefaction and fungi in abundance, but no decomposition occurred. The author, at the end of his most valuable paper, suggests the application of his method to the investigation of diseases supposed to be of parasitic origin, and concludes by summing up his results in nine propositions.—*Glasgow Medical Journal*, August, 1872.

---

2. *Characters of the Uterine Movements.*—D. L. OSER and W. SCHLESINGER have undertaken a series of investigations on the characters of the uterine movements, which, they observe, have been but little studied of late years, and with improved means of research, whilst those of the intestines, ureters, and other organs have been carefully examined. Their experiments were performed upon for the most part twenty curarized animals, and are recorded in the last part of Stricker's *Med. Jahrbucher.* At the commencement they found not unfrequently that a stimulus which in one animal excited the most violent uterine contractions, in another was apparently wholly inoperative, and this not only in animals of different genera, but in those of the same species. In

rabbits, for instance, it sometimes happened that the slightest mechanical stimulus called forth active contractions, whilst in another animal no response occurred to the strongest electrical currents. They find that the animals best adapted to exhibit the movements are young but sexually mature rabbits which have not yet been impregnated. In these the uterus, when the abdominal cavity is laid open, appears as a flat, band-like, pink-coloured organ, at perfect rest, and but rarely exhibiting spontaneous movements. Their first experiments were made to determine the effect of arrest of the respiration. Krause, Mayer, and Basch have all shown that asphyxia induces movements of the intestines; but it has not hitherto been shown that a similar effect is produced upon the uterus. Oser and Schlesinger's experiments, however, show that, in from ten to thirty seconds after suspension of the respiration, contractions are perceptible, commencing from the tubæ and cervix, which in a few seconds more extend over the whole uterus. This organ becomes pale, cylindrical, and rigid, and moves downwards and towards the middle line; the cornua raise themselves in an arched manner, and, intercoiling, almost form a ball. The contractions increase in vigour with continued arrest of the respiration for some minutes. In a second set of experiments the effects of compression of the aorta were investigated, and it was ascertained that general contractions of the uterus occurred in a period varying from eighty to one hundred and twenty seconds after. Rapid abstraction of blood from the system generally produced the same effect. It was remarkable also that contraction of the whole uterus resulted in a few seconds from suddenly applied compression of the four cerebral arteries, which showed that the presence of imperfectly arterialized blood in the uterus itself was not a necessary condition for the production of the contractions. Kussmaul and Tenner long ago described a somewhat similar experiment, but gave a different explanation of the phenomena observed. In a pregnant rabbit they exposed and compressed the carotids and vertebrals. Extrusion of the fœtuses occurred, but it was accompanied by convulsions, and they attributed the delivery to these rather than to any contractions of the uterus. MM. Oser and Schlesinger further found that, after section of the spinal cord in the cervical region, the contractions of the uterus no longer occurred more rapidly after arrest of the respiration than after compression of the aorta, in each case supervening in about the same space of time—that is to say, in about one hundred seconds. After section of the cord, neither general loss of blood nor arrest of the flow of arterial blood to the brain produced any perceptible contractions. It was ascertained that no motor stimulus is conducted to the uterus from the brain through the vagus or sympathetic nerves, since section of these nerves was without influence on the movements, whether the cord was divided or not. The authors of the paper do not attempt to fix the situation of the centre for the uterine movements, but they point out that their experiments prove that it lies at a higher point than that at which they divided the spinal cord—namely, between the occiput and atlas; and they think it is probable that it occupies some part of the medulla oblongata. At all events, it is unlikely that it is situated in the spinal cord, since the experiments of Kussmaul and Tenner and Schiffer show very clearly that the circulation of dyspnœic blood (a term that implies no theory as to whether the phenomena produced are due to the absence of oxygen or the presence of carbonic acid) through the cord is not followed by any symptoms of irritation—as by convulsions—but by rapid paralysis of the posterior extremities, the paralysis appearing in the course of a minute or a minute and a half. But in Oser and Schlesinger's experiments the uterine contractions did not occur in any case till after the lapse of a minute; and hence, if it were maintained that they were due to the passage of dyspnœic blood through the cord, it must also be admitted that such blood acts coincidently as a stimulus to one spinal motor centre and as a paralyzer to another. It is much more probable that they are due to the passage of such dyspnœic blood through the medulla oblongata. Other considerations lead them to the same conclusion.—*Lancet*, July 20, 1872.

## MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

3. *Physiological Action of Chloral.*—Dr. ALEX. EDW. MCRAE has published (*Edinburgh Medical Journal*, August, 1872) an account of a number of experiments, undertaken with the view of obtaining the objective phenomena exhibited in a healthy animal under the influence of a varying dose of chloral. The animals experimented on were rabbits.

The following were the general results observed: 1. When sleep began to come on, the rabbits laid themselves in their natural position for sleep, and seemed comfortable. 2. When asleep, they sometimes moved as if shifting for a rest; sleep was not continuous. 3. Before sleep came fully on, and when the number of respirations was about its lowest, the respiratory movements were somewhat jerky. 4. When sleep was very profound, the respirations were abdominal. 5. When asleep, but not totally anæsthetized, loud noises, if they did not waken them, increased the respirations. 6. When completely anæsthetized, neither loud noises nor pricking influenced the respirations. 7. No rabbit recovered that was at any time completely anæsthetized. 8. When asleep, they would frequently wake up and eat, then go to sleep again; and when the effects passed, they ate ravenously. 9. The slowing of the respirations was the premonitor of sleep; and, when the respirations fell to 28, death followed. 10. When asleep, the increase of the respirations was the premonitor of resolution. 11. Shivering was not observed in any instance where death was to supervene, but it preceded resolution. 12. Sometimes 10 grains produced sleep; sometimes 30 grains had scarcely any effect; 60 grains, in two cases, killed; and, in another, did not produce complete anæsthesia. 13. Sometimes the hyperæsthetic state was of short duration; sometimes it was scarcely appreciable, so rapidly did the anæsthetic state supervene. 14. Small doses increase, large doses decrease, the co-ordination of nerve force. 15. Vision seems to be affected before hearing, hearing before smell, smell before touch. 16. Frequently, on recovery from a large dose, they preferred to sit under the fire, though hot cinders were falling upon them. 17. When anæsthetized, the eyelids were generally fully open. 18. In falling, they did not seem to have a tendency to fall to one side more than the other. 19. Salivation was occasionally exhibited, also relaxation of the sphincters, with increased peristalsis of the bladder and rectum. 20. The solution, when injected under the skin, was absorbed with great rapidity. 21. In the small doses, when the effects passed off, they seemed more lively after than before the experiment. 22. When ten or more grain doses were given, and sleep had passed off, they did not seem to have the power of co-ordinating their movements for some time Their hind-legs were the first to give way and the last to recover. 23. Of the voluntary muscles, those of the ear, neck, and jaws were the last to give way and the first to recover. 24. Rigidity set in immediately after the respirations ceased. Sometimes the hind-quarters became rigid before the respirations ceased. 25. About four minutes was the time that elapsed between the injection and the manifestation of the first symptoms attributable to chloral. 26. The respirations were very considerably increased immediately the injection was commenced. 27. The injection almost always caused local inflammation, which ended in resolution, abscess, or gangrene. The latter was generally of the dry kind, as observed in senile conditions. 28. In no case was complete anæsthesia produced without death following.

*Post-mortem appearances.*—The superficial vessels were empty, and the parts consequently had a blanched appearance. All the internal vessels were full of blood. The walls of the heart were flaccid. Both sides of the heart were gorged with blood. The lungs were congested, with here and there apoplectic spots. I have seen the same conditions in cases of alcoholic poisoning. The vessels of the encephalon were full of blood. The odour of chloral was distinctly perceptible in the substance of the brain.

Dr. McRea remarks: "The superficial vessels and arterioles had contracted;

and the heart, being gradually deprived of nerve force, was unable to contract on its contents and keep up the circulation; consequently, there being an impediment in front, the blood was retained passively in the venous tracts."

In small doses, it seemed to act as a stimulant, and produced heat of surface. In large doses, when the anæsthetic state was produced, the surface became cold. Professor Haidenhain, of Breslau, at the conference at Innsbruck in 1869, stated that "irritation of sensitive nerves produces a rapid diminution of blood-heat, a sensible decrease of the calibre of vessels, and a decrease in the frequency of the pulse." Now, we have all these conditions produced by a dose of chloral. There can be no doubt that chloral, in certain doses, does act as an irritant, but of the toxic kind. Whether it acts as an irritant locally on the peripheries, or on the more distant centres, is a question that still remains to be settled. That it does reach the centres is beyond doubt, for we have found it abundantly in the brain tissues. If the above phenomena are caused by its local action, then it must be a most powerful local irritant—more powerful, indeed, than any other of its chemical fellows, whose action, generally speaking, is nearly analogous, such as alcohol or chloroform. It is true that the local effects produced by the hypodermic injection, viz., inflammation, abscess, gangrene, would rather favour the hypothesis of this local action; but we must remember that the solution used was necessarily concentrated; also that, with the exception of a few rare cases, little or no inconvenience was caused by taking the same size of a dose by the stomach for many months together. Again, when a part is burned or rapidly destroyed, we see the local effects immediately, but no toxic condition follows. True, we sometimes have what is called shock; but the phenomena evolved are quite distinct and recognizable from those produced by a toxic agent. Sensibility characterizes the one, insensibility the other. The presumption therefore is strong that chloral acts directly on the nerve centres.

When small doses were given, there was a very manifest exaltation of the temperature of the surface; when large doses were given, and the anæsthetic state induced, the surface got cold. The hyperæsthetic state was first induced, and always was present, though once or twice its presence was scarcely noticeable, so rapidly did the anæsthetic state supervene; and, when the larger doses were given, anæsthesia followed, thus leading us to believe that the peripheral nerves became paralyzed, either by exhaustion of nerve force in the hyperæsthetic stage, or by direct poisoning and consequent molecular disturbance at the centres. We must here observe, that when we remember Claude Bernard's experiments with the sympathetic nerve, it does seem anomalous to say that peripheral paralysis was present, and that the surface was cold, and the parts post mortem had a blanched appearance. But we must also remember that the heart was paralyzed, and, consequently, the arterial system was empty, though the larger venous tracts were gorged. This condition, though helping to prove that the action of chloral is on the centres, demands explanation. Professor Stirling says, that "there is a constant reflex influence maintained by a sensitive nerve upon the bloodvessel nerves." Nerve force being equally distributed to these two sets of nerves, the bloodvessels maintain their normal calibre. But when the peripheries of the sensitive nerves become paralyzed, the inhibitory nerve-fibres of Remak gain increased power, or at least gain the ascendency (Meryon), the calibre of the vessels decreases, and, consequently, also the flow of blood; hence the coldness of the surface, and the blanched appearance of the flesh. When given in small doses, it stimulates the sensitive nerves, which gain the ascendency over the vaso-motor fibres; hence we have relaxation of the walls, enlarged calibre, increased vascularity, temperature, and hyperæsthesia, exactly the opposite of what takes place when a large dose is given.

Could chloral be used in doses sufficiently large, so as to let the fibres of Remak gain the ascendency over the sensitive fibres, and could this action be localized, and not become universal and lead to death, as we have seen by these experiments, then we should have in chloral a most potent power for good. This, however, can never take place so long as the body possesses absorbents. The fact that rigidity set in immediately after the respirations ceased, and sometimes before, thus producing a state analogous to that produced by intense cold, proves that chloral induces great depression of nerve force; and, when this depression or exhaustion becomes general or complete, death must follow.

4. *Researches on Quinia and Iron.*—M. RABUTEAU has communicated to the Academy of Sciences some investigations made by him on the physiological properties of quinic acid, and the reduction of perchloride of iron in the organism. Quinic acid, which is solid, and tastes like vegetable acids, such as tartaric and citric, exists in a remarkable quantity in bark, in which it is said to be combined with quinia, cinchonia, and lime. The author has prepared quinate of soda and quinate of potassa by dissolving quinic acid in the bicarbonates of these two bases, and he has made many experiments with these two salts, which are neutral in reaction, deliquescent, and tasteless. He injected into the veins of a dog five *grammes* of quinate of soda dissolved in forty *grammes* of water. The only result of this operation was marked constipation. The urine became neutral, and even slightly alkaline, although previously acid. M. Rabuteau took himself two grammes of the quinate of potassa in fifty grammes of water. The urine did not become alkaline, doubtless because the salt was too much diluted, but its acidity was diminished. A watery solution of quinic acid introduced into the stomach does not produce any particular result. From this acid can be prepared a lemonade as agreeable as the tartaric and citric lemonades. These researches show that quinic acid is harmless, and also that it acts almost like all the ordinary vegetable acids; that is to say, it is consumed in the organism, the alkaline quinates being transformed into bicarbonates, which render the urine alkaline when administered in sufficient doses; for example, five or six grammes at least in the day. From the quinate of soda producing constipation after its injection into the blood, it is concluded that, if introduced into the digestive tube in sufficient quantity, it would produce purgative effects, according to the general rule that saline purgatives constipate when they are injected into the blood. The alkaline quinates being destitute of taste, it might be thought that the quinate of quinia would be less sapid than the sulphates. This salt, however, is bitter, like all the other salts of quinia. According to the experiments of M. Rabuteau, the perchloride of iron is reduced by contact with albuminous and various organic substances. It follows from this that, when ferruginous waters containing sesquioxide of iron are taken, for example, in water in which a red-hot iron has been cooled, perchloride of iron is formed by the hydrochloric acid of the gastric juice, and is transformed into protochloride of iron. When perchloride of iron is injected into a varicose vein to obliterate it, it forms a cord, owing to the coagulation of blood produced by this salt; but this cord disappears gradually, for the perchloride is changed into the protochloride, which has not the power of coagulating the blood, but even prevents coagulation, as has been shown by direct injection of it into the veins of animals.—*Brit. Med. Jour.*, Sept. 7, 1872.

5. *Effects resulting from Large Doses of Quinia.*—In the tenth number of the *Centralblatt f. d. Med. Wissenschaften* for 1872, derived from the *Deutsche Klinik*, 1871, No. 46, we find the following summary of the observations of Dr. C. BINZ, on the effects upon the living organism which result from large doses of quinia (over 15 grms.), or of smaller doses frequently repeated at short intervals; namely, 1st, disturbance of the nervous system, and of the heart's action, producing general prostration and feebleness of the cardiac movements; 2d, chronic disturbance of brain; 3d, disturbance of the organs of speech, occasionally entire loss of speech, for a longer or shorter period; 4th, more or less complete, or even incurable amaurosis of one or both eyes; 5th, hemorrhage from the lungs (probably), and eruptions on the skin; 6th, irritation of the intestinal canal from the arrest of the ordinary movements by the action of the quinia; 7th, catarrhal inflammation of the urinary bladder. D. F. C.

6. *Therapeutic Action of Muriate of Lime.*—The chloride of calcium (U. S. P.), which was formerly held in high esteem as a remedy, but which has latterly fallen almost into disuse, Dr. WARBURTON BEGBIE is of opinion pos-

sesses therapeutic virtues sufficiently eminent to restore it to confidence. This remedy was formerly esteemed in the treatment of scrofula, rickets, tabes mesenterica, and lupus. Dr. B. had used it most frequently in cases of struma, the most noticeable feature of which was enlargement of the lymphatic glands in the neck, and he affirms that it has, in every case, answered his expectations. The remedy must, however, be taken for a very *long time*, before its beneficial effects are visibly produced.

Dr. B. has also used it advantageously in cases resembling tabes mesenterica. "I have observed," he says, "the exhibition of the remedy in such cases to be followed by the cessation of a protracted diarrhœa and of exhausting perspirations, by a subsidence of fever, hectic in type, by improvement in appetite, the gaining of flesh, and a gradual restoration to the condition of health. In the grave disorders of the alimentary canal occurring in children, the muriate of lime is useful in arresting looseness of the bowels, in promoting digestion, and favouring nutrition. I have frequently prescribed the remedy, and been gratified by the results obtained from its use, in cases of children stopping short of any definite disease, but characterized by depraved appetite, loss of flesh, pallor of countenance, protuberant belly, wasted limbs, and more or less of febrile excitement, the latter presenting an intermittent or remittent type, and usually attended by two distinct paroxysms of fever during the twenty-four hours.

"The recognized dose of the muriate of lime is from 10 to 20 grains; but the solution of the old Edinburgh Pharmacopœia forms a convenient mode of its administration, and in that form I have habitually prescribed it. Fifteen drops of this solution, containing about ten grains of the muriate of lime, may be considered an average dose for a young adult or adolescent; and with such given thrice daily in milk, I have usually commenced: gradually the dose may with advantage be augmented to nearly thirty or forty drops; it is, however, not advisable, by reason of its occasionally producing such unpleasant effects —as nausea, sickness, pain in stomach, and loss of appetite—to elevate the dose still further. I have thought that a little period after food is the better time for its administration, but this is not of much importance—many patients taking it with advantage either shortly before or during meals. In the instance of any young children to whom I have frequently administered it, the dose must of course be apportioned according to age. I have given it to such in doses of three to ten drops. Very speedily in some cases, these chiefly of the nature of diarrhœa and feeble digestion with attenuation in children, I have witnessed its beneficial effects—quite as speedily, indeed, as we observe the operation of lime-water as an antacid and alterative. When given in the more chronic ailments, to which reference has been made, and more particularly in the strumous enlargement of glands, a rapid curative action is not to be looked for. Under such circumstances, indeed, the persistent use of the remedy is called for. I feel thoroughly satisfied, however, that in so prescribing and continuing the muriate of lime, the physician and patient may look forward with confidence to its beneficial operation. Weeks, months, a twelvemonth, are surely not to be considered as very lengthened periods of time for the removal of a malady which has existed for many years, and possibly bid defiance to all the other means of treatment which may have been employed. It has been my lot within the past three or four years to prescribe the remedy for patients who have thereafter passed temporarily from my observation, but at the end of months, twelve months, or even a longer time, having meantime, conformably to exhortation, diligently continued the remedy, have again presented themselves, to afford the most gratifying proof of the therapeutic action in their cases of the muriate of lime.

"I have very seldom witnessed the production of any disagreeable effects, and rarely had occasion to interrupt the medicine. In a few instances, I have found that a smaller dose than that usually prescribed appeared to agree better and to work out the therapeutic action of the remedy most satisfactorily.

"No notable physiological feature has presented itself to my notice while watching with care the therapeutical action of the muriate of lime. Conformably to the experience of experimenters, I have observed the acidity of the urine to be lessened during the administration of the remedy. Dr. Parkes mentions that the result on the urine, of the exhibition of muriate of lime, is a considerable increase in the amount of lime."[1]—*Edinburgh Medical Journal*, July, 1872.

7. *Medicinal Properties of the Bromide of Potassium.* — Prof. Sée, in one of his last lectures at the School of Medicine, expatiated upon the medicinal properties of the bromide of potassium, a drug so much in vogue and yet so little understood. He said it was often prescribed in a most reckless manner, and administered with substances not only chemically incompatible with it, but whose therapeutic action is diametrically opposed to it. For instance, it is frequently ordered with, or as a substitute for, the iodide of potassium, and *vice versâ*, and there is a prescription in Bouchardat's "Formulaire" which bears the name of a celebrated physician, containing these two salts in combination with the chloride of sodium and butter, which was to be eaten with bread as a substitute for cod-liver oil. The bromide of potassium acts specially as a sedative on the vascular and nervous systems, whereas the iodide is purely an alterative operating on the general processes of nutrition and elimination. The bromide of potassium is essentially a vascular remedy. It is probable that through the nerves it acts on the muscular coats of the vessels, causing permanent contraction of the latter and consequent anæmia of the organs, a condition opposed to that produced by belladonna. It acts indirectly as a sedative on the heart, which it may stop, but only when given in enormous doses. As a soporific or narcotic it is preferable to opium, particularly in children, as it does not produce headache or the other inconveniences of the latter. Its double action, as vascular and as a nervous hyposthenisant, renders it a most invaluable agent in all cases of neurosis accompanied with congestion of the nervous centres, and hence its great utility in epilepsy, hysteria, chorea, etc.; it has also been found useful in the localized forms of neurosis, such as dysphagia, asthma, hooping-cough, etc. But to be useful in these cases, particularly in epilepsy, it must be administered in large doses, not less than five grammes a day for an adult, and two grammes for a child of 4 in this latter affection. When given in smaller doses it is not only a waste of time, but it increases the epilepsy; and in order to keep the disease in check, he recommends it to be taken continuously, and largely diluted, so as to prevent any irritating effect on the stomach, and to promote its elimination by the kidneys. It is a dangerous remedy in coughs, but most useful in asthma, which it relieves, not by increasing the bronchial secretions, but by relieving the respiration. The bromide of potassium cannot be replaced by the other salts of potash, nor yet by the iodide of sodium, which has lately been recommended as a substitute for it.—*Med. Times and Gaz.*, August 31, 1872.

8. *Action of certain Neurotics on the Cerebral Circulation.*—Drs. PATRICK NICOL and ISAAC MOSSOP have published (*B. and F. Med.-Chir. Rev.*, July, 1872) some interesting observations made by them on the condition of the *fundus oculi*, and especially of the optic disk, under the action of certain neurotic drugs. The experiments on the human eye were made on the authors of the paper and on rabbits. The experiments seem to have been conducted with all proper precautions.

The drugs experimented on were hydrate of chloral, bromide of potassium, alcohol, quinia, ergot, and belladonna.

*Chloral*, when taken by the authors, caused the optic disk to assume a transparent appearance, resembling white wax; and in the rabbit, increased whiteness was produced, due to diminished vascularity. A tendency to anæmia of the brain, therefore, seems to follow the administration of chloral.

When bromide of potassium was given in half drachm or drachm doses, and once with a scruple dose, "the disk and retina were congested, even in ten minutes after administration, and this state of congestion went on increasing, as long as examinations were made. Even after the lapse of several hours, the increased redness was still manifest. The vascularity was found to be greater as the dose was increased." "It seems, therefore," the authors say, "to be a justifiable inference, that bromide of potassium produces congestion of the brain."

---

[1] Composition of the Urine in Health and Disease, page 166.

[This inference as to the action of bromide of potassium on the cerebral circulation must cause great surprise, since it is entirely opposed to the results of the investigations of Dr. Brown-Séquard, and to those of Drs. Amory and Clarke: and it would, moreover, seem to be inconsistent with the views now generally entertained as to the condition of the brain in sleep (see *Hammond On Sleep and its Derangements*), and be equally subversive of the received theory of the physiological action of the drug in inducing sleep. Further experiments will be required before the inferences of Drs. N. and M. can be accepted.]

The effect of *alcohol* was to produce congestion of the disk, with congestion of small vessels not seen before, and congestion of the choroid and retina. When brandy was taken three-quarters of an hour after the exhibition of a drachm of chloral, the effect of the spirit in counteracting the anæmic condition, was very manifest. In half an hour the disk and retina were congested, instead of being very pale.

*Quinia*, in ten grain doses, produced an anæmic condition of the disk and retina.

Ergot, in doses of half a drachm to a drachm of the liquid extract, produced a diminution of the vascularity of the disk and retina.

*Belladonna* produced congestion of the disk and retina.

9. *Action of Sulphate of Quinia upon the Temperature in Phthisis.*—Dr. Ogle, with the view of determining the influence of quinia upon the temperature in pulmonary phthisis, made a number of careful observations upon a young woman suffering from this disease, and under his care in St. George's Hospital. The conclusions deduced from his observations are as follows:—

1. The high temperature and its uniform range in a case of active phthisis, the temperature during observation prior to the exhibition of the large doses of quinia being never lower than 100° F., and occasionally 101°.

2. The promptitude with which (see date May 22d), on the exhibition of the ten-grain doses of quinia, the temperature sank to 99°, this range being maintained night and morning.

3. The same degree of temperature only being attained when the quinia was increased from ten- to fifteen-grain doses, except on one occasion (the morning of May 25th), when it fell to 98°.

4. The return of the high temperature on the disuse of the quinia, and even of a higher degree, as on three occasions it reached respectively 100.2°, 100.3°, and 100.4°.

5. The subsequent reduction of temperature to 99° on the quinia being given in twenty-grain doses night and morning, with only one or two exceptions, when it attained 100° and a little more.

During these fluctuations no proportionate modifications of respiration, of the pulse, or of the heart's beat, were found to exist.—*The Lancet*, July 6, 1872.

10. *On the Influence of Belladonna on Sweating.*—Dr. Sydney Ringer communicates to *The Practitioner* (Aug. 1872) a short paper on the efficacy of belladonna, in ointment or liniment or hypodermically, in checking sweating, local or general. He was led to try the influence of belladonna on sweating from its remarkable action in checking the secretion of milk. He first employed it "in a case of unilateral sweeting. A man, forty-five years old, had been troubled for many months with profuse sweating of the right side of the face and neck, breaking out on the slightest exertion or excitement, or when near a fire, so that the sweat ran down his face and neck in streams, soaking his collar and the band of his shirt, his face being neither red nor congested. The perspiration produced an abundant crop of miliary vesicles, which were strictly limited to one half of his face. The liniment of belladonna applied two or three times a day abated this copious sweating considerably, and reduced it to a little

more than the natural amount, and this improvement lasted about six months after the discontinuance of the application, and then the sweating gradually returned, till it became as bad as ever.

"The writer has many times checked the sweating of the head and face of young children, often so profuse as to soak their hair and the pillow on which they have been sleeping. Again, by means of the belladonna ointment or liniment rubbed in two or three times a day, he has several times checked the profuse sweating of the hands, which is sometimes so copious as to run off them in drops, and is especially noticeable at the finger tips and thumb-balls. Sometimes the good effects are permanent, sometimes the sweating may not return for a considerable time; but occasionally, however, this treatment fails."

11. *Amount of Caffein in Coffee, and its Action on the Body.*—Dr. AUBERT, in an essay in part xii. of *Pflüger's Archiv*, states, that, though it is well known that coffee-berries and tea-leaves contain the same very poisonous alkaloid, caffein or thein, no researches have been undertaken to show how much caffein is contained in an ordinary cup of coffee. It is also an open question whether the coffee-berries should be lightly or strongly roasted, though it appears that experience has taught mankind the mode of preparation by which the largest quantity of the alkaloid is best extracted. Dr. Aubert has made a series of researches on these points in conjunction with Dr. Haase. Dr. Aubert's mode of determining the amount of caffein present in any given specimen is based upon its great solubility in chloroform, and especially in hot chloroform, whilst most of the other constituents of the berry are insoluble in it. His results show the presence of a larger amount of caffein than that given by most other experimenters, with the exception of Graham, Stenhouse, and Campbell, with whose analyses his own nearly coincide. The quantity he and they obtained is about 8 or 9 per cent. Aubert thinks that a cup of coffee prepared from about one ounce of coffee contains from four to five grains of caffein. His experiments on the effects of various degrees of roasting show that there is little caffein lost even when the coffee-berries are roasted black; in this respect he is in antagonism with Liebig. He obtains from the best Pekoe tea from 2.149 to 2.423 per cent. of caffein, the greater portion of which is extracted by the simple process of infusion.

As regards the physiological action of caffein he coincides with previous experimenters in considering that it causes increased reflex excitability and tetanus, the action resembling that of strychnia. If, however, one sciatic nerve be divided before the poisoning, that limb is not convulsed; hence it acts on the nerve centres. A frog is tetanized by the subcutaneous injection of a quantity not exceeding 0.005 of a gramme. 0.120 of a gramme injected into the jugular of a rabbit tetanizes it, and a cat or dog is tetanized by 0.2 of a gramme. It is remarkable that by maintaining artificial respiration for some time the symptoms of tetanus entirely disappear. Its action on the heart of mammals is that it causes acceleration of the beats, with diminution of the blood-pressure; this last effect he attributes to the poison paralyzing the ganglionic nerves of the heart.—*Lancet*, July 20, 1872.

## MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

12. *Connection between Pulmonary Hemorrhage and Phthisis.*—In a paper contributed by Dr. Julius Sommerbrodt, of Breslau, to the June number of *Virchow's Archives*, the question whether the extravasation of blood into the air-cells of the lungs is ever the cause of consumption is very fully discussed. Numerous experiments were made by injecting blood taken from their own bodies into the tracheæ of dogs; the animals being killed at periods of time varying from one hour to twelve days after the operation. In those soonest

killed the blood was found to have penetrated into different parts of the lungs, but was accumulated in greatest quantity near the roots. At the end of the first day. the injected patch could be readily distinguished from the other portions of the lung by a well-defined difference in color, which, however, became fainter on the third day, and generally ceased to exist on the eighth day. In no case were fibrinous coagula found obstructing the bronchial tubes. In dogs killed in from two to three hours after the experiment, the microscope showed the presence in the alveoli, containing blood, of some pale cells, two or three times as large as the blood-corpuscles. and having a nucleus and opaque somewhat granular contents. Twenty-four hours later. these cells, which varied in size from 0.006 to 0.015 mm., had become more numerous; their nucleus was less distinct, and their contents were more opaque. The cells continued to increase in number until the fifth day, when they also attained their maximum size (0.021 to 0.024 mm.). Occasionally, Dr. Sommerbrodt has discovered within them corpuscular elements, which he has no doubt are blood corpuscles, not only because they resemble the corpuscles, lying free in the alveoli, but also because they are not stained by carmine as are the nucleus and nucleolus. He thinks, therefore, that they have penetrated into these cells. In animals killed after the seventh day, the cells were found to have become less round, to have a tendency to become crenated and more opaque, and to decrease in numbers. Dr. Sommerbrodt has no doubt that these cells take their origin from the walls of the alveoli, and has been able not only to trace the gradations from the healthy cell to those just described, but also to detect the points from which they have been thrown off. These appearances he attributes to catarrhal pneumonia, and he therefore asserts that blood is capable of exciting this form of inflammation; but, having never been able to discover thrombi in the minute bronchial tubes, he rejects the explanation of Niemeyer, believing that blood exercises a directly irritating effect upon the alveoli.—*Brit. Med. Journ.*, Sept. 7, 1872.

13. *Crystals in the Sputum in Bronchial Asthma.* By Prof. E. Leyden, of Köningsberg, and Dr. E. Salkowski.—The observations contained in this paper are based on four cases of bronchial or nervous asthma, of which the details are given, and two others are added in an appendix, having come under the observation of the author while the original paper was in the hands of the printer. The four original cases agreed in their symptoms in a marked degree. The patients were all young, strong, and otherwise healthy; the asthmatic attacks were characterized by a feeling of want of breath, with difficult loudly-wheezing respiration and a short cough; the attacks continued for hours or days, and disappeared suddenly without leaving behind any ill effects. The lungs were healthy to physical examination, and the attacks apparently altogether free from danger to life. In all the cases the expectoration presented similar characters, it was scarce during the attack, but richer after; it was generally tough, of a grayish-white colour, holding a number of fibres, flocculi, and masses suspended in a transparent basis. Some of these suspended masses appeared as roundish plugs or thread-like processes, drier than the rest and of a firmer consistence. Under the microscope these were seen to consist of closely packed round cells filled with dark granules, and in the midst of them a number of delicate *crystals*. The crystals were colourless, with a dull soft lustre, and had regularly the form of very pointed octahedra. The cells in these masses were generally somewhat destroyed, and the substance between them granular, the granules presenting molecular motion, but there was no appearance of spores or fungi. In addition to these peculiar masses, the sputum contained numerous other flocculi, consisting of pus corpuscles and epithelium. Crystals of a similar character have been observed at various times in different parts of the body; in the spleen and blood of leuchæmic patients; in the substance of a mucous tumour (myxoma) of the optic nerve; in the sputum in a case of croupous bronchitis with asthmatic attacks, etc. Also in their chemical reactions, these crystals resemble those previously observed, especially by Neumann, in leuchæmic blood, and in the medulla of bone; they dissolved readily in acids, alkalies, and water, but were insoluble in ether.

Looking to their clinical aspects, the cases described are to be set down as cases of co-called bronchial asthma. By some the asthmatic attacks have been looked on as merely the symptoms of a catarrh of the bronchial tubes (*Catarrhe sec* of Robin). But most are now of opinion that the attacks are caused by spasm of the circular muscles of the minute bronchi, the contraction of these muscles narrowing the tubes, and interfering with the admission of air. The author believes that this is the proximate cause of the attacks, but the question remains as to the cause of this spasm of the muscles. Does it depend on an affection of the central nervous system (asthma nervosum)? Or is it reflex, arising from a catarrh or other condition of the tubes? The author having discovered the existence of these crystals in the cases observed by him, believes that they are to be looked on as the excitors of the reflex action. Looking to the formation of similar crystals in leuchæmic blood after death, it seems probable that in asthma, owing to some peculiarity, there is formed in the alveoli or minute bronchi, a substance which deposits these crystals, and that these, by their mechanical (pointed) character, and perhaps from their chemical nature, irritate and so produce the attacks. In respect to treatment, the author observes that in this disease the ordinary treatment of bronchial catarrh is useless; he gives narcotics with good effect, opium, morphia, belladonna, stramonium, chloral hydrate, during the attack. To meet the disease itself, he uses bromide and iodide of potassium. Looking to the very ready solubility of the crystals in alkalies, he has used inhalation of chloride and carbonate of sodium with good effect in some cases.—*Glasgow Med. Journ.*, August, 1872, from *Virchow's Archiv*, March, 1872.

---

14. *Cold-water Treatment of Typhoid Fever.*—Dr. E. Scholz, it is stated (*Deutsches Archiv f. Klin. Med.* ix.), since the year 1868, when he introduced the cold-water treatment of typhoid fever into the Bremen Hospital, has treated 125 patients—82 men and 43 females—the majority of whom were aged between 15 and 30 years. Of these cases, five, or about four per cent., terminated fatally. The temperature of the cold baths into which the patients were immersed varied from 8° to 16° R., according to the season of the year, and according as the medium temperature of the patient's body throughout the day exceeded or fell short of 39° C. In severe cases, in addition to the cold bath, cold applications were made to the chest, and over the abdomen. The leading circumstance which, according to Dr. Scholz, contraindicates the employment of cold baths, is the occurrence in any case of intestinal hemorrhage, because of the necessity of the patient being then kept in perfect quietude; but even in such cases the application alone of ice to the abdomen will be found beneficial, and may be continued until the debilitating effects from the loss of blood are recovered from. It may also be remarked that the cold bath is inadmissible in those rare cases where the fever attacks individuals of broken-down constitutions, drunkards especially, and the temperature of whose bodies continues depressed, seldom rising to 39° C. Dr. Scholz relates a case of this kind, in a girl 19 years old, who was destroyed by the cold bath. She was affected with emphysema of the lungs.

The statements of Dr. Scholz as to the beneficial soothing influence of the cold-water treatment in typhoid fever upon the functional nervous centres, and upon the digestive and cutaneous systems, are fully borne out by the history of the cases that were subjected to it. It is said by Dr. Scholz, that of five cases attended with intestinal hemorrhage in which the remedy employed was the liq. ferri sesquisulph., only one terminated fatally. In some severe cases of the fever, occurring mostly in delicate females, on the eighth or tenth day of convalescence there was experienced severe dental hyperæsthesia.—*Centralblatt f. d. Med. Wissenschaften*, February 24, 1872. D. F. C.

---

15. *Cold Water in the Treatment of Abdominal Typhus in the Royal Julius Hospital at Wurzburg, during the years* 1870–71.—Dr. F. Riegel states in the (*Deutsche Archiv f. Klin. Med.*, ix., 1871), that the cold-water treatment of abdominal typhus was marked by considerable mildness. The temperature of the "*half* baths" which were employed, was 20 R., hence the patients were

enabled to remain in them for ten minutes at a time, without experiencing any especial inconvenience. They would often, as they lay in them, take a shower bath of cold water. These baths were continued until a temperature of 39.5° was attained. In the intervals between the baths, cold compresses were applied over the abdomen. These were found to be preferable to bladders filled with ice, the latter, from the powerful impression they made, caused immediately an extreme contraction of the peripheral bloodvessels, so that the cooling effect caused by the diminished circulation at the surface of the body was, it is probable, productive of injury rather than of good.

Of one hundred and fifty-six typhoid patients treated during the years 1870–71, in the hospital—including only the well-marked severe cases—only seven proved fatal; while in former years, before the adoption of the cold-water treatment, in the same hospital, the mortality among the typhoid cases reached 20 per cent.

It was observed by Jurgensen and Hagenback, so, also, by Dr. Riegel, that in his typhoid patients, very often there occurred a severe burning pain in the soles of the feet, so that there appeared to be a connection between this symptom and the cold water treatment. Intestinal hemorrhage was of less frequent occurrence than under the former expectant treatment. It is here, perhaps, that is shown the beneficial action of this mode of treatment.—*Centralblatt f. d. Med. Wissenschaften*, No. 27, 1872. D. F. C.

16. *Variola and Typhus Fever occurring at the same time, in the same Individual, and running their Course together.*—In the *Berliner Klin. Wochenschr.*, 1872, No. 11, Dr. Th. Simon states that an individual labouring under a recent slight attack of smallpox, was admitted as a patient into the Hamburg Hospital. Shortly after his reception there were developed in him the premonitory symptoms—intumescence of spleen, disturbance of sensorium, and the peculiar aspect of the stools—of fever evidently of the typhus type. During the desiccation of the pustules, there made its appearance a very copious eruption of roseola. The case terminated favourably.

Dr. Simon took opportunity to state that he had, during the prevalence of the variolous epidemic in Hamburg, frequently witnessed the early and widespread prevalence, among typhus patients, of a roseolar eruption, most probably the result of an influence exercised by the presence of the variolous epidemic. —*Centralblatt f. d. Med. Wissenschaften*, May 18, 1872, from *Berliner Klin. Wochenschr.*, 1872, No. 11. D. F. C.

17. *Bromide of Potassium in Epilepsy.*—Dr. Legrand du Saulle has published the results of the administration of bromide of potassium in two hundred and seven cases of epilepsy. Headache, gastric disturbance, disturbance of sensation, and other troublesome symptoms, have been described as following the use of the remedy; but these he has not found to occur when the drug has been pure. When the quantity taken daily reaches 4 grammes, the reflex sensibility of the fauces, epiglottis, and root of the tongue, and the sensibility of the generative organs, are diminished. Acne then also appears; which is not, however, as has been represented, of critical importance. Dr. Legrand du Saulle commences with a gramme and a half or two grammes daily, and increases the dose gradually to 6 or 9 grammes a day: in one case, in the course of twenty-six months, the increase was to 14½ grammes daily. In men, no result may be observed till the daily dose reaches 4 or 5 grammes; in women, 3 or 4½ grammes daily will sometimes produce distinct effects. Of 207 epileptic patients treated with bromide of potassium, all symptoms of epilepsy ceased in 17, who were under observation during three or four years; 28 remained free from one to two years; in 33 there was marked improvement; in 19 the intervals between the attacks were increased, and these were less severe; in 110 there was no result. Dr. Legrand considers that it is not safe to entirely omit the use of the bromide, even when there has been no epileptic attack for a year. The patients, however, must be watched; for, under the prolonged use of the bromide, mental disturbance, stupor, confusion of ideas, impotence, and acne, are apt to set in. The last-named affection has sometimes disappeared

under the use of arsenic simultaneously with the bromide of potassium.—*British Medical Journal*, August 3, 1872, from *Gazette des Hôpitaux*, Nos. 21 and 22, 1872.

---

18. *Lactic Acid Treatment of Diabetes.*—Two papers on this subject, one by Dr. BALTHAZAR FOSTER, the other by Dr. JOHN W. OGLE, were read before the British Medical Association at its recent meeting. Dr. Foster, in his paper, called attention to the low temperature which he had observed in diabetes, and the bearing which this had on the respiratory theory of the disease. By means of diagrams, the daily excretion of sugar and water, the specific gravity of the urine, and the body-weight of each patient were represented graphically, under ordinary diet, animal diet, and under treatment by lactic acid. An analysis of the diagrams showed that under the acid treatment the quantity of urinary water was notably diminished, and in a less degree the daily amount of sugar excreted. The specific gravity of the urine was less affected. The bodily temperature rose under the use of lactic acid, and the functions of the skin were restored. Dr. Foster also observed that the acid exercised a favourable influence on the lung-complications in some cases.

Dr. Ogle, in his communication, described several cases of saccharine diabetes, in which he had, in addition to the use of a non-amylaceous diet, used lactic acid in considerable quantities. The details and results of some of these had been already mentioned in some of the weekly periodicals; and Dr. Ogle now brought before the Section the particulars of two cases which had recently been under his care at St. George's Hospital, and of which daily notes, with registration of amount of urine and its specific gravity, of the weight and sometimes temperature of the body, had been carefully noted. The two cases were admitted into hospital on the same day—one being a male aged 20; the other a female aged 28. In both cases meat, and non-amylaceous vegetables, with gluten bread, etc., were given for several days, without the administration of any remedies. In the case of the woman, who was treated for eleven weeks before the lactic acid was given, the urine ranged in quantity between 112 and 178 ounces per diem; after the use of the acid the quantity quickly sank, and throughout its use fluctuated between 40 and 70 ounces daily, one day being as low as 30 ounces. During the whole of this time the specific gravity remained much the same as when the patient came to the hospital. In the case of the man, who was treated for seven weeks, under the lactic acid treatment, no marked diminution of urine and no change in the specific gravity was observed; but, after its long-continued use, whether owing to it or not was doubtful, great constipation came on, requiring active aperients. As regarded the weight of the body, in both cases during treatment it fell; in the man from 8 st. 5 lbs. to 7 st. 7 lbs., in the woman from 7 st. 3 lbs. to 6 st. 8 lbs. In the case of the man the temperature was chiefly *above* the normal, on one occasion only being below, and then it was 97.4—on one occasion reaching 102.8. In the woman it was almost always *below* the normal, mostly being below 98. In both cases the morning and evening temperatures were often taken, but neither one nor the other was uniformly below or above the other. In both cases the lactic acid was increased until four drachms were taken in the day, and this was persisted in for several weeks. In neither case were any sting-like pains, rheumatic or other, complained of during the entire treatment, and in neither was any noticeable perspiration produced. In both cases the sweet and hay-like smell of the breath existed. In neither case was there any indication of interference with or affection of the nervous system; power of movement of the entire muscular system, and sensibility, both general and of particular organs, were entire throughout. The uvula, palate, and pupils were natural. In neither case was there albumen or uric acid in the urine; and in neither was there any decided lung-mischief manifest, though a degree of harshness of respiration was perceptible in the woman. Although in one case a decided diminution of the amount of urine without increase of specific gravity followed the use of the lactic acid, yet in both cases flesh and strength were lost, and Dr. Ogle did not think that these cases showed that any benefit arose from treatment.—*Brit. Med. Journ.*, August 24, 1872.

19. *Treatment of Diabetes.*—Dr. Wm. Richardson, who was himself a sufferer from this disease, effected a cure in himself, and subsequently in various patients under his care, by adopting a plan of which the following are the essential features: The employment of regular and steady exercise; ablution of the skin daily with soap and water; the use of a bath containing a tablespoonful of carbonate of soda twice in a week; exposure of the surface of the body as far as is practicable to the sunlight, and the continuous use of iron, which he uses in the form of tincture of the perchloride in four or five drop doses, with one or two drops of tincture of nux vomica and eight or ten grains of chlorate of potash three times daily. He is an advocate of a restricted diet; but when the plan of treatment which he suggests is carried out fully, he finds that a considerable amount of relaxation as regards food is not injurious. He regards the sudden adoption of a very restricted diet as likely to prove highly prejudicial. Dr. Richardson's present dietary is sufficiently liberal, and, besides meat, includes brown bread with plenty of fresh butter, maccaroni, and rice, potatoes sparingly, and at all times a little dry fruit. Even a few glasses of champagne occasionally he does not find at all injurious.—*The Practitioner*, July, 1872, from *Dublin Journ. Med. Science,* April, 1872.

20. *Treatment of Rheumatic Gout by the aid of the Galvanic Battery.*—Dr. Julius Althaus, in a paper read before the British Medical Association at its recent meeting, offered some remarks on the nature and pathology of rheumatic gout, which he likened to the atheromatous process in the internal tunic of the arteries occurring in old people, and which, he said, was one of those highly insidious and chronic inflammatory conditions characteristic of the period of involution and senile decay. After glancing at some results of recent microscopical research in the morbid anatomy of rheumatic gout, the usual treatment of this disease was criticized, and found to be open to improvement. The author had for the last six years, sought and found opportunities to use the constant current in such cases, and had been well satisfied with the results. It could not cure rheumatic gout; it could not prevent the patients from advancing in age, nor check altogether the process of involution and senile decay to which the system must in the end succumb; but it did good in the following ways. 1. It acted as a general tonic to the system, and improved all the most important functions of the body, if applied in a peculiar manner which was described in the paper. 2. It procured sleep, even in cases where opiates or chloral did not answer. 3. It relieved the pain. 4. If perseveringly applied, it reduced deformities. The author did not wish to imply that the use of internal remedies should be altogether eschewed in the treatment of this disease, as by thus acting we should only deprive ourselves of many chances to do good to our patients; but in the cases treated by him, he had given the first place to the constant current, and given medicines internally only for removing complications. He laid stress upon the necessity of persevering with the galvanic treatment for a considerable time, in order to do permanent good; and gave directions as to the way in which the treatment should be carried out.—*Brit. Med. Journ.*, August 24, 1872.

21. *Tubercular Meningitis.*—Dr. Bierbaum terminates an elaborate paper on this disease with the following conclusions:—

"1. There is an hereditary predisposition to this. It is seldom confined to one case in the same family, several of the children, as a general rule, becoming subjects of it. The disposition may, however, be also acquired. 2. Such predisposition consists in the scrofulo-tubercular diathesis. There is no essential difference whether this diathesis makes itself known by altogether indubitable symptoms or only shows itself by constitutional debility, which is nearly related to scrofulosis or tuberculosis, and leads to this disease. 3. It is nowise a necessary condition that the father or mother of the child should at an earlier period have been the subject of the disease. 4. The direct transmission of the scrofulo-tubercular diathesis from the parents to the children is of far greater etiological signification than the occurrence of the predisposition among collaterals. 5. Meningitis tuberculosa is peculiarly a disease of infancy, appearing far more frequently during the first than the second dentition period. 6. The sex exerts no special influence on its frequency. 7. Whether the warm or cold season of the year most favours its occurrence is not decisively settled. 8. Climatic, social, and anti-hygienic conditions are only so far operative, as they influence the production of the scrofulo-tubercular diathesis. 9. This cerebral affection does not assume an epidemic character. 10. The exanthemata, and especially measles, are exciting causes of great importance. 11. Inflammatory affections of the respiratory organs more seldom give rise to this disease than pertussis. 12. In the abdomen lies a fertile source of many exciting conditions."—*Med. Times and Gazette*, August 17, 1872, from *Journal für Kinderkrankheiten*, No. 12, 1871.

---

22. *Erectile Tumour of the Intestinal Canal.*—M. LABOULBÈNE, one of the candidates at the Académie de Médecine for the vacancy in the section of pathological anatomy, was fortunate enough, in the paper which it is customary to read announcing his pretensions, to be able to lay before the Academy, at its meeting on the 4th inst., an account of what he believed to be an entirely new fact in pathological anatomy—viz., the occurrence of erectile tumours in the alimentary canal. A patient, aged 74, having vomited blood and passed it by the anus, it was diagnosed, after a careful examination, that he was suffering from ulceration of the duodenum. He died in the course of some hours, presenting the signs of internal hemorrhage. A most careful autopsy showed that almost all the organs were in a state of complete integrity, considering the age of the person. In the duodenum, however, a little lower than the orifices of the bile and pancreatic ducts, was found an oblong tumour the size of an almond, its projection being very visible when the blood which filled the duodenum had been washed out. Examined under water, the mucuous membrane which covered the tumour presented a small, irregular ulceration, whence the recent discharge of blood had evidently issued. Two other blackish points seemed to indicate former orifices, which had undergone repair. On cutting through the tumour it was found to have invaded the entire substance of the mucous membrane, the muscular fibres and peritoneal coat being still recognizable. The mass consisted of capillary vessels of various sizes, which were dilated at several points, the dilatations being either uniform or only lateral. M. Laboulbène regards the tumour, in fact, as being precisely similar to erectile tumours met with on the surface of the body. Similar tumours, hitherto unobserved in this locality, may have given rise to fatal intestinal hemorrhages, the causes of which have remained unknown.—*Med. Times and Gazette*, June 29, 1872.

---

23. *General Bony Metamorphosis.*—Mr. EDWARD HAMILTON exhibited to the Pathological Society of Dublin, March 16, 1872, a remarkable specimen of morbid deposition of bone. Of the patient, a woman about 30 years old, no satisfactory clinical history existed; she had apparently been of a rickety constitution. After death, the thyroid body was found large and congested; the lungs were congested, the left lung being reduced in size. The vascular system was healthy, with the exception of a few specks of atheromatous deposit in the aorta. The abdominal viscera were generally healthy. The skeleton, which Mr. Hamilton exhibited, had undergone extraordinary changes. The upper part of the skull was normal; and no bony deposit had taken place in the meninges of the brain. The temporal muscles were atrophied, chiefly from disuse. The lower jaw was entirely ankylosed; and a ridge of bone ran perpendicularly down from the left zygoma. The patient had fed herself through a space formed by the loss of some front teeth. The head was firmly fastened to the cervical vertebræ. The spinal column was curved like the letter S. On the left side a mass of bone had formed in the areolar tissue between the pectoral muscles; and on the right side, in the same situation, a mass of bone bound together the humerus, the coracoid and acromion processes of the scapula, and the ribs. The pelvis was large and oblique. Massive stalactiform bony processes connected the ilium, trochanter, and femur, on each side. The bones of the legs were comparatively free from disease. The ankle-joints were stiff, and the plantar ligaments were extensively ossified. The erector spinæ muscles were

changed into enormous plates of bone running down to the crest of the ilium. The latissimi dorsi had also become metamorphosed, and a ridge ran from the occiput to the left scapula. The whole body had an inclination to the left side; and the left thorax was contracted. Mr. Hamilton suggested that Nature, in endeavouring to compensate for a rickety tendency, had acted too energetically, and that an excess of bony deposit had thus occurred. The microscopical examination of the abnormal formation showed the Haversian system of true bone. Dr. E. H. Bennett, in presenting a cast which illustrated similar ossific metamorphosis of tissue, referred to the history of William Clarke, who was born in the county Cork, in 1677, and lived to the age of nearly 67. The skeleton of this man, which has been in the possession of the University of Dublin for more than one hundred years, was shown by Dr. Bennett. It presented characters almost identical with those of Dr. Hamilton's case. Particulars of the history of Clarke were to be found in the *Philosophical Transactions* for 1740, and in the second volume of Smith's *History of the City and County of Cork.* In the latter account, the man's posture some time before death is rather quaintly described, as being "somewhat like that of the Venus of Medicis;" and the author, after giving a very accurate account of the abnormal bony formation, proceeds to say that "it would require a volume of itself, composed of a new kind of osteology, to give a minute description of this surprising skeleton and its irregularities—being as difficult a task as to describe Calypso's grotto." The cast shown by Dr. Bennett was of the back of a healthy girl, aged 11, one of a family of seven healthy children, in none of whom was there any history of rickets. While she was still at the breast, a tumour began to show itself at the inner and upper extremity of the right scapula. Subsequently, a plate of bone became developed from the right ilium to the scapula. The jaw was still free, but the bony growth was slowly but surely advancing.—*Brit. Med. Journ.*, June 1, 1872.

24. *Ichthyosis treated by Sulphate of Copper.*—Dr. Dumesnit reports (*Repert. de Pharmacie*) a case of ichthyosis of the nose, which had resisted various remedies, internal and external. Dr. D. then prescribed an ointment of four parts of sulphate of copper in thirty parts of benzoated lard, under the use of which the cutaneous affection disappeared in about three weeks. It returned, however, a month later, when the same application was resumed and persisted in, and the patient continued free from the disease up to the date of the report, two years after the remedy was first used.—*Journ. Med. de Bruxelles*, May, 1872.

25. *Root of Abroma Augustum in Dysmenorrhœa.*—Dr. Bhoobun Mohun Sircar extols the efficacy of this article in dysmenorrhœa, and says he has employed it for some twelve years, in upwards of five hundred cases, with the most beneficial results.

This plant, called in India Olutkombol, belongs to the natural order Bythneriacæ. It grows to be a handsome small tree, having simple alternate palmately divided hairy leaves, and beautiful showy purple flowers, drooping on long peduncles; sepals five, united at the base, having an epicalyx; petals, same in number as sepals. Stamens not columnar, and united to the claws of the petals; two-celled introrse anthers and smooth pollen. Fruit is a capsule, composed of a few carpels, containing numerous black seeds; bark tough and fibrous; roots slender, and numerously branched. It is a tropical plant, and abounds in various parts of India. The officinal part of the plant is the root. The roots are covered with thick easily separable bark; within the bark is a thick, viscid, tenacious, white fluid, which seems to be the active principle.

*Use.*—When administered during the menstrual period, the patient, if suffering from dysmenorrhœa, is relieved from the pain, and usually no catamenia appears during the following month, consequently there is no recurrence of pain. Sometimes the menses do appear on the next catamenial period, but are not attended with pain. In young married women, the cessation of the menses, and consequent non-occurrence of pain, are followed by conception. When one administration of the drug fails, it should be repeated; young women under twenty years of age seem to be specially benefited by its use. The curative action of this medicine is seldom ineffectual in the neuralgic and congestive forms of dysmenorrhœa, or the modifications of both these forms; but it is of no use in the mechanical form of the disease. Slender fresh roots, from the size of a swan-quill downwards, should be preferred. ℥ss to ℈ij of the root should be well rubbed up with eight or nine black peppers in a little water, and should be taken in the morning on an empty stomach. This dose should be repeated for seven days successively, commencing from two days before the appearance of the menses, and continuing until two days after their cessation, that is to say, two days before the appearance of the menses, three days during the flow, and two days after their cessation, making altogether seven days. In case of missing the two premenstrual days, the medicine can be taken on the first day of the appearance of the menses, and continued for seven days, with equally good results.—*The Indian Med. Gaz.*, July 1, 1872.

26. *Elimination Theory of the Cure of Diseases.*—Dr. F. E. ANSTIE in several papers (*The Practitioner*, vol. viii. pp. 161, 289. 356) has investigated the action of the organism when poisoned with narcotic doses of alcohol, and its behaviour in presence of mineral poisons, and in neither case has he found the least reason to believe that there was such an escape of the poisonous matters as could produce any considerable remediable effect. In the No. of the same Journal, for August, of the present year, he examines a different class of poisons, the alkaloids, in order to see whether they, by their manner of elimination, afford any analogical support to the theory of Nature's cure of diseases by expulsion of morbid matters from the body; and arrives at the conclusion, that the results of his researches lend no support whatever to the idea that preservative design is the basis of alkaloidal elimination. "Here, as before, we are only able to recognize the ordinary physical phenomena of endosmose and exosmose, and mechanical circulation by diffusion, supplemented of course by the action of the heart, which pumps the blood into the ramifications of the arterial and capillary systems."

## SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

27. *Treatment of Aneurism.*—Mr. OLIVER PEMBERTON, Professor of Surgery in Queen's College, Birmingham, in his address on Surgery before the British Medical Association at its recent meeting, called attention to some most interesting points connected with the treatment of Aneurism and read the following interesting and very instructive remarks:—

"Professor Lister's improvement in the Hunterian operation, by which the permanent closure of the artery at the spot tied can be insured, without dividing the coats of the vessel, at once effects a complete change in some of the most important conclusions that for long years have guided us in our treatment of aneurism. One of the greatest dangers attending the Hunterian operation has hitherto been considered to be the application of the ligature immediately beyond any considerable branch of an artery. This impression has deterred surgeons from applying a ligature to that portion of the artery which otherwise would have seemed to them best adapted for the purpose. That an abiding coagulum will form under certain circumstances in the vicinity of almost any number of branches on the proximal side of a ligature, I am perfectly satisfied; but the attainment of this success in many cases depends on a fact which it is almost impossible for the surgeon to estimate beforehand; that is, the facility with which the blood will coagulate or deposit its fibrin in any particular instance. In the case I am about to relate, the existence of this tendency, in a much greater degree than usual, was the main cause of the success of the operation.

"In June, 1870, I saw F., aged 60, strumous from childhood, and highly intellectual. There was an aneurism, three months old, of the left superficial femoral artery, about five inches below Poupart's ligament. There were marked indications of general arterial disease, and, during the past twelve months, of semi-paralytic seizures, evidently due to temporary hindrance to the cerebral circulation. Pressure failed, and was abandoned at the end of three months. I then advised ligature—the aneurism rapidly increasing. On October 12th, the aneurism having 'leaked' the previous day, in the presence and with the sanction of Sir James Paget, I tied the common femoral with a hempen ligature. Fearing, from the diseased state of his arteries, the worst results, as the ligature might be thrown off, the wound was left completely open, being simply covered for protection. In forty days the ligature came away, and the patient died a week afterwards, from causes wholly removed from aneurism. There was no hemorrhage, but gangrene may be said to have commenced in one toe. When I came to dissect the arteries I found the circumflex ilii, epigastric, and the profounda femoris given off together, that is at opposite points of a line drawn round the main trunk, a little above Poupart's ligament, the point of ligature being five-eighths of an inch below these vessels, the part of artery intervening being firmly plugged. The profunda was pervious for some distance and then plugged. There were plugs of former date in the right and left carotids and in the left axillary arteries. The aneurismal sac was filled by broken down clot and fluid blood, and would have suppurated.

"Now I cannot consider this case as any contribution to the surgery of the common femoral, though I hoped and expected it would be so; for I think hardly any doubt can be entertained that the patient would have died from secondary hemorrhage on the separation of the ligature, had it not been for the unusual tendency of the blood to coagulate, for nothing could well be closer than those three vessels were to its site. At the same time I think, with Porter and Macnamara (On Ligature of Common Femoral, *British Medical Journal*, II., 1867, p. 285), that the exclusion of the common femoral, on account of the assumed liability to secondary hemorrhage and gangrene that follows its ligation, is not founded on any solid basis. It was selected in this instance in preference to the external iliac, and I should so select it again; of course, on the presumption that I was going to place my ligature in the vicinity only of such branches as the epigastric and circumflex ilii; in the presence of which I feel satisfied that an adequate coagulum may, under ordinarily favourable circumstances, be reasonably expected to form.

"It is rather here then I draw your particular attention to this feature of coagulation. For I ask myself this question: If I had tied the artery—complicated as its irregularity was in this instance—with a hempen ligature, and there had not existed this tendency, would it have held? Assuredly not. This same tendency to coagulation, as manifested in the collateral vessels, whilst it preserved the patient's life, would, I may observe, have subsequently caused his death by gangrene. Further, it appears to me that in proportion as the coats of the arteries deviate from their natural state, and as the general vital conditions are lowered, so is this tendency increased.

"Surgically speaking, then, this very circumstance of diseased arteries and tendency to blood-coagulation, in some cases, establishes a reason why the surgeon should not refrain from operating where the diseased condition of the coats of the arteries alone would lead him to abstain from interference. And it is clearly of the utmost importance to increase this tendency to the coagulation of the blood as much as possible, after all operations for aneurism, by good diet, and by the absence of all depressing remedial agents.

"Apart from this question of coagulation, I feel warranted in expressing my conviction that too much stress has been laid on the disturbing influence of a large branch or branches taking origin close to the part of the vessel tied. If, however, we are to believe the teaching of Professor Lister (*Observations on Ligature of Arteries*. Edinburgh: 1869), it will be of little moment in the future whether a plug form on either the proximal or distal side of the ligature at all, so long as the 'prepared catgut' insures permanent closure of the vessel at the spot tied, without severance of the coats, and, consequently, without liability to secondary hemorrhage.

"From what I have seen since this case came under my notice, I am glad, before such a meeting, to be able to express my unbounded admiration of and confidence in the use of the animal ligature, as placed before us by Professor Lister. If the so-called 'antiseptic system' has effected no more for surgery than to give us the means of effectually closing an artery without cutting it through, and without suppuration, it has in doing this placed the crowning glory on the treatment of aneurism, for which it has waited since the time of Hunter.

"For forty days I watched patiently for the detachment of this ligature with an open wound to escape deep-seated suppuration. I watched twenty-one days in a case last May, in which I tied the external iliac for aneurism at Poupart's ligament; and though the case did perfectly well, the suppuration about the track of the hempen cord gave me the greatest anxiety.

"Last August, Mr. Lund, at Manchester, tied the same artery with a catgut ligature. No pus was secreted; the wound healed on the eighth day.

"Professor Lister remarks that ligature of the innominate must yet prove, with these means at command, 'a very safe procedure.' Yes; but always, I presume, provided that the coats of the artery are healthy where the ligature is applied; and on this we await further evidence: given this, and I feel inclined to echo the assurance.

"I shall now endeavour to show that the principles of treatment in the methods of flexion, compression of the sac, manipulation, are one and the same.

"The method of flexion can only be applicable to certain arteries. All that it is needful to do is to keep the limb flexed, not continuously, but to such an extent as to alter the relations between the orifices of ingress and egress, and the fibrinous laminæ of the sac. Some of these laminæ become, as it were, dislocated, and protrude more or less into the stream when a fresh deposit of fibrin occurs, and so the cure is gradually effected.

"The exercise of pressure on the artery above the angle of flexion appears to be useless. What we want is a stream of blood flowing into the aneurism; that it should be more or less retarded there, and that there should be present something in the nature of a foreign body; for example, the fibrinous laminæ, on which blood would coagulate and deposit its fibrine. This retardation of the blood in the sac can be effected by a gentle compression of the artery on the distal side of the aneurism; as I strongly hold that what we want in these cases is a deposition of fibrin rather than a coagulation of blood. For, surely, the slow deposition, layer after layer, of solid fibrin in the sac, until the filling-in is complete, is a surer guarantee against subsequent mishaps than if it were closed by a mass of suddenly coagulated blood.

"I place before you the case of K., a Lascar, 22, who came under my care May 10, 1859, having an aneurism of the left popliteal artery of four months' duration. Flexion was maintained for seventy-two hours, with the result of the aneurism ceasing to pulsate, and becoming solid in eleven hours. Compression, during the first forty-eight hours, of moderate character was also made by Weiss's instrument on the artery in Scarpa's space.

"I believe that this was the first instance on record in which the combination of compression and flexion was made use of; and the case was published very fully at the time in the *Lancet*. But I feel satisfied now, in reviewing it, that pressure below the sac would have proved more advantageous than above.

"If one wanted convincing of the very slight means whereby important curative changes may be brought about in aneurismal sacs, I have but to ask a consideration of the facts connected with the following cure, in thirty-nine hours, of a popliteal aneurism.

"M., 28, a porter, came under my care on the 17th January, 1871, with an aneurism of the right popliteal artery five months old. On the 22d, I showed the patient how I proposed to treat him—by flexion—at the same time bending his leg, and arresting the circulation through the sac. It is very likely that the patient, in the afternoon, subsequently to my visit, imitated my proceeding, as he seemed very much struck by what I had done. Be this, however, as it may, I only bent the limb once, and fingered the sac lightly, and told him to keep quiet. At two A. M. on the 23d, he was seized with a sudden aching, shooting, gnawing pain in the neighbourhood of the aneurism, extending down the calf of the leg as far as the ankle, and upwards as far as the crest of the ilium. The pain continued very intense for some hours, during which he had no sleep. He had severe nausea, but no vomiting, and was chilly. The pulsation in the aneurism seemed unchanged, but he remained poorly all the day.

"On the 24th, he slept until three A. M., when he awoke and found that pulsation had ceased in the aneurism. The limb was cold below the knee, and œdematous; and though the pain of the previous day was better, it was not gone. On examining the aneurism it felt hard, and was free from pulsation. He was subsequently discharged cured.

"I am inclined to think that coagulation commenced here after the first flexion; that the deposit of coagulum, after a few hours, increased rapidly, as indicated by pain which culminated in intensity as the sac was solidified. There may have been a clot detached which plugged up either the proximal or the distal orifice; if so, it took place at the final exacerbation of pain, when pulsation ceased; for I certainly judged the contents, when I bent the limb, to be fluid.

"The verification of the intense pain that occurs, when the blood-current is forced suddenly into narrow collaterals, or at the supreme moment when the contents of the sac are solidified, was here very conspicuous.

"To ask, for a few minutes, the judgment of a skilled assembly, such as this, on the probability of applying pressure with success to the actual sac of an aneurism, would appear to be returning to the pre-Hunterian period; and yet had the theory by which aneurisms are cured now, been fully comprehended then, I can have little doubt that the necessary deposition of fibrin would have been brought about in many instances that otherwise signally failed.

"I entertain the opinion that compression of the sac ought to be used more frequently than it is now. The principle of this proceeding is exactly the same as flexion; we want simply to alter the relations of the laminated fibrin to the cavity of the aneurism, so as to bring about a further deposition of fibrin on the projecting surfaces of any of the displaced laminæ. The pressure need not be continuous. It should be very gentle. It need not, even, be distributed uniformly. But it must ever be borne in mind, that if it be carried to such an extent as to empty the sac, and to press one wall against the other, then a cure cannot occur. The very conditions under which a cure is possible are here ignored. Blood must pass through the sac. It must not pass through too rapidly; and I now think that this would be facilitated by gentle pressure being made on the artery below the aneurism.

"In March, 1857, I visited D., 67, an active sportsman and farmer. He had an aneurism, a month old, of the right external iliac artery, just above Poupart's ligament. It was somewhat fusiform in shape, measuring three inches in length, by one and a half in breadth. There was no bruit. I failed to arrest the circulation through the aneurism by making pressure on the artery above, but I found I could greatly limit the current by making pressures on the sac itself. The question of an operation being raised, I advised that, as a ligature could hardly be applied to a sound artery, other than in the course of the common iliac, and bearing in mind the vicinity of the bifurcation, no operation should now be performed; but that Dr. Carte's compressor, under careful management, should be applied to the sac itself. Accordingly under my directions two senior students (the late Mr. Dennis Moore, of Walsall, and Dr. Neal, of Birmingham) remained with the patient. The treatment extended over a period of six weeks. During the first fortnight, little good was effected. Then, for eight consecutive days pressure was applied, on an average of seven-and-a-half hours per day. The pressure effectually retarded the circulation—nothing more—and was never applied for more than three or four hours at a time. Consequently the patient was not wearied, and had undisturbed nights. There was now a complete interval of nine days, during which no pressure was applied, the aneurism being firmer and with less pulsation, and he was allowed to move about in his room. Then followed nine days of treatment, averaging six hours and a-half per day. From this time the aneurism ceased to pulsate, and the patient gradually resumed his ordinary avocations. He is yet living, in his eighty-third year, active and well. In December last (letter from Mr. Earlam, of Abbots Bromley) the remains of the aneurism were represented by an indurated enlargement about the size of a chestnut.

"I venture to think that even Dr. Macnamara will give me credit for having studied O'Bryen Bellingham (*Observations on Aneurism*, London, 1847) to some purpose, who, happily for my patient, published his observations in the January of this very year.

"Reduce the force and volume of the blood-current by any carefully considered measures, and we follow out the reasoning of Brasdor and Wardrop in the distal ligature; a reasoning which is rendered amenable to treatment of internal aneurisms hitherto beyond surgery; a reasoning that has the authority of nature's own proceedings to recommend it, from the fact that it is more or less identical with the mode in which the so-called spontaneous cures are brought about.

"I own, this case—unique as it is in this situation—has always been in my mind, on the discovery of any fresh instance of aneurism. It serves to confirm the soundness of the remark, that in proportion as the true method of curing aneurisms has been fully understood—that is, the gradual lessening of the blood-current to final and complete coagulation in the sac—so have the means whereby this has been brought about, become simpler and more safe.

"The occurrence of these cases led me to the attentive consideration of the facts, as they are at present before us, connected with the purposed displacement of the contents of the sac of an aneurism, in the hope of plugging up either outlet: and the case of M. happened when a subclavian aneurism[1] was under my notice in another ward, about the treatment of which I was—to say the least of it—previously undecided.

"It seemed to me so impossible to limit the degree of force, short of extreme hazard, in the method originated by our distinguished *confrère*, Sir William Fergusson (*Medico-Chirurgical Transactions*, vol. xl. 1857); and I was not reassured by perusing the cases which he has recorded, or those of Mr. Pollock (*Op. cit.* p. 45).

"I cannot but regard the treatment by manipulation to be based on exactly similar principles to those on which the methods I have just alluded to are founded. No forcible pressure to detach fibrinous laminæ, in my judgment, ought to be used; as the result would be the almost certain separation of small portions of the clots, which would be carried into the circulation, and would eventually plug the smaller vessels, causing symptoms according to the functions of the parts which the plugged vessels supply. For I must own I have not been able to see how these clots could be located at either outlet, to be fixed by arrangement, as it were, at a spot where it is simply impossible to be assured that they could effect a lodgment. All that is necessary is, that the aneurism should be gently manipulated, so that the laminæ of fibrin in its interior should occupy a different position to that which they had previously held with reference to the two orifices of the sac; and in order that the blood should not be allowed to pass out of the sac too freely, if I have an opportunity, I shall endeavour to compress the distal artery in accordance with the principles I have been advocating.

"B., 32, a former Lifeguardsman, was admitted into hospital October 20th, 1870, with aneurism of three months' duration, in the second and third parts of the right subclavian. It was as large as a hen's egg, and accompanied by bruit, and by dilatation of the axillary artery. He stayed a month, during which time iodide of potassium was freely given; and then, frightened at the idea of an operation, he suddenly left. On January 20th, 1871, he was admitted again. The aneurism seemed firmer, giving me the impression that fibrin had been deposited. From February 10th to 14th, the sac was manipulated, night and morning, for a few minutes. The proceeding was one of the utmost gentleness and regularity, and consisted in making pressure with the thumb and finger, so as to slightly approximate its fibrinous walls, and, whilst thus limiting the circulation, probably rendering the clot surface somewhat irregular, and promoting the tendency to deposit already commenced. On the 11th, pulsation was much weaker. On the 14th, it ceased altogether. There was no brachial or radial pulse below the aneurism; and he complained of pain, extending downwards from the aneurism to the iliac region. This was constant, severe, and of a numbing character. There was no constitutional disturbance. During the following days the collateral circulation about the clavicle and shoulder developed itself; and especially noticeable was a large transversalis colli crossing over the aneurismal sac. On April 17th, he left for the Sanatorium, the sac being small and hard. Since this time he has pursued his business as a hawker, travelling all over England. I examined him, and so did my colleagues, as recently as the 19th of June, sixteen months after the cure of the aneurism, and I noted the following facts. A little induration marks the site of the aneurism; the axillary artery and upper part of brachial can be felt, cord-like, as far as insertion of coraco-brachialis—here pulsation begins, and can be felt, feebly, in the radial at the wrist. He is himself excessively thin, but well and hearty.

---

[1] Pollock records three cases of direct compression applied successfully to subclavian aneurisms.—Guy's *Reports*, vol. xvi. p. 63.

"The absence in this case of any symptoms of paralysis during the four days in which the sac was manipulated, justifies the inference that no clot at least passed into the cerebral circulation, and I entertain myself the conviction that the cure was brought about by a steady process of lamination, rather than by a detachment of a clot, happy enough to fit into either orifice of the aneurism.

"I have now to call your attention to what I believe to be a not uncommon result of the cure of aneurism, after it has been effected for some time; I mean the formation of varicose aneurism or aneurismal varix. I shall first relate two cases. In 1844, my late colleague, Mr. Amphlett, tied the superficial femoral for an aneurism of the artery as it enters Hunter's canal. The patient was aged 41, and a soldier. There was nothing unusual at the operation, and the ligature was thrown off on the nineteenth day. Ten days subsequently, there was arterial hemorrhage from the seat of ligature. This recurred in ten days, and a third time in fourteen. Pressure on the arch was used, and the patient recovered. He remained well for upwards of three years, when a tumour formed at the seat of operation, which was evidently an anterio-venous aneurism. With this, coming under the care of my colleague, Mr. Baker (our President), he died with a drunken pleurisy, just five years from the date of the operation. I was fortunate in being able to dissect his vessels. The femoral artery had formed an aneurism at the seat of the operation as large as a hen's egg, and the femoral vein communicated with the artery by a large opening. The former aneurism was cured, and the artery between it and the seat of ligature was impervious.

"M., 50, a soldier, syphilitic and intemperate, became the subject of an aneurism of the upper part of the right posterior tibial artery. Pressure was made over the artery on the pubic arch, for three weeks; on it, below, for nine months. The aneurism was cured. Ten months afterwards, an arterio-venous communication formed at the chief seat of pressure, and the patient died in about a year and eight months subsequently. I had the opportunity of minutely examining his body, and I came to the conclusion that pressure on the pubes induced varix in the femoral vein, at the situation of the saphenous opening; that this subsequently, sustaining pressure, enlarged and became adherent to the artery, and finally, by a succession of changes, readily comprehended, between a diseased artery and a diseased vein adherent to each other, ended in establishing an aneurismal varix.

"At the time when I published this case, which was done at considerable length in the *Medico-Chirurgical Transactions* for the year 1861, I attributed the results merely to the injurious effects of long-continued instrumental pressure, producing morbid changes around and between the contiguous vein and artery; and I was inclined to quarrel with Bellingham's remark (*Medico-Chirurgical Transactions*, p. 12), 'That no morbid change of any kind takes place in the artery or vein at the site of instrumental compression.' Subsequent reflection, however, and an attentive study of the preparations, have led me to seek a different explanation. Thus, in consequence of the diseased conditions and diminished elasticity of the arterial walls, which almost constantly exist in all arteries above the seat of an aneurism, the velocity of the blood-movement is considerably retarded. It is evident that this retardation must be materially increased by the obstruction at the seat of ligature, or the seat of long-continued instrumental compression. The immediate consequence of this retarded velocity is an increase in lateral pressure. This dilates the diseased coats of the artery into an aneurism, which—by the usual processes of pressure, absorption and disintegration—opens into an adjoining vein. Sometimes, as in the second case I have adduced, the opening is effected directly into the vein without the previous formation of an aneurism—and the vein subsequently becomes varicose by the passage of arterial blood into it."—*British Medical Journal*, August 10, 1872.

28. *Modern Treatment of the Advanced Stages of Constitutional Syphilis.*—Mr. WM. ACTON read the following paper before the Surgical Section of the British Medical Association, mainly with the view of eliciting from M. Ricord, who was present, a statement of his *present opinions* on the important question of the treatment of syphilis.

Mr. Acton remarked, "On what constitutes the virus of syphilis, I fear we know little more at present than we did thirty years ago. Experience, however, has corroborated M. Ricord's observations, that relapses of constitutional syphilis are not uncommon even after long periods of apparently perfect convalescence. These accessions of disease we may attribute sometimes to neglect of treatment; but we must admit, likewise, peculiarities of constitution and temperament as bearing on the tendency, which, in spite of the best regulated treatment, will be followed by relapses. In other instances it is noticed that any general disease which will debilitate the system may be followed by an attack of constitutional syphilis, which without such debilitating cause would never have occurred. The old theories about the influence of *ferments* seems to be borne out by some of these exceptional cases.

"Practitioners, however, will agree with me that, in the present day, in some of these rebellious cases patients and medical men both lose confidence in remedies, and there are those among us who, after seeing such relapses, doubt if it be the effects of syphilis or mercury which we have to treat in these advanced cases.

"The *treatment* should consist in ameliorating the symptoms, commencing with those that are most urgent. We should attempt to improve the broken-down constitution, too often found in these instances; if mercury have been given, we must leave it off till the constitution has somewhat recovered. Our object should be to place the patient in the best possible condition as regards air, diet, and freedom from anxiety, and, if possible, to give him confidence that the disease is curable, for the moral and mental depression to which the patients are reduced is often very painful to witness.

"This being done, I commence with tonics and iodide of iron. If there be ulcers, I treat them with the ointment of nitric oxide of mercury. If the throat and voice be affected, topical applications must be used. If osseous or periosteal tumours exist, iodine or blisters should be applied to reduce the size of the swellings and prevent disfigurement, or pressure on the brain or spinal cord. This local and general treatment will act almost as by a charm in relieving sleeplessness and pain in the bones and joints.

"In the commencement, notwithstanding that iodine may have been taken (according to the statement of the patient) without previous benefit, I commence the syrup of iodide of iron in bitter infusion, taken at meal-time in moderate doses. As long as the remedy tells on the constitution, I adhere to moderate doses: but as soon as convalescence tarries or progress is not made, I increase the dose even to two drachms three times a day. When the system becomes tolerant of these doses, I change the syrup for the iodide of potassium in solution, beginning with ten or fifteen grain doses, taken at meals and dissolved in large quantities of fluid.

"The subsequent treatment should be guided not by the number of grains given, but by the effect which the remedy has on the complaint. As soon as the disease ceases to retrograde, I augment the dose with the best possible effect. When the preparations of iodine and potash cease to benefit the best patient, I add bromide of potassium, not in combination with the iodide, but prescribe it at a different time of the day. It frequently happens that we succeed in curing the disease with these salts, but if the complaint be very persistent, if relapses occur after short intervals, I no longer hesitate to give mercury, and my hearers may be glad to learn what are the indications we follow in the administration of the remedy.

"*Treatment with Mercury.*—As a general rule, it must be admitted that mercury is not required in the treatment of the advanced stages of constitutional syphilis. In fact, we attempt to cure our patients without resorting to the mineral. On the other hand, there are many instances in which the recovery hangs fire; the patient ceases to improve even under large doses of iodine. The disease becomes stationary. Yet such are the objections of some practitioners to a course of mercury, that, in spite of the recrudescence of severe symptoms, the anti-mercurialist will not give mercury in any form. This is an error of the day. The rule which experience teaches us is that, if a relapse occur, or if the progress of recovery be arrested, after the various preparations of iodine have failed, some of the mercurial preparations must be had recourse to, judiciously given and closely watched. In some cases, friction with mercurial ointment will be most beneficial; and I must admit that in England I find the old plan of rubbing in mercury answer better than almost any other that I am acquainted with. There are those who employ fumigations. M. Ricord is very partial to a prescription combining biniodide of mercury, iodide of potassium, and sarsaparilla. In these stages, the writers of the last century had a high opinion of corrosive sublimate; but this irritant poison has fallen into disuse in modern practice. Those of my hearers who are acquainted with the writings of the older authors on syphilis need not be reminded of the almost miraculous recoveries detailed after giving mercury, long before iodine was known; and it is stated that the patient never had a relapse. These old writers, however, omitted to state how often the remedy not only failed, but brought the patient to an early and untimely grave. I can bring to my recollection many instances which, I have every reason to believe, died from the administration of mercury given on the old plan, and which would now be rescued by the mercury being preceded by the different preparations of iodine.

"If mercury be found beneficial, as I am sure it will be, if judiciously given and carefully watched, and the symptoms of syphilis subside, the preparation should be persisted in till every vestige of the disease disappears. The dose required is sometimes surprisingly small. I have known obstinate symptoms, which have withstood iodine, disappear in a week. In a case now under my care, of syphilitic nodules of the testis, a six weeks' course of frictions has been required to enable the testis to recover its former elastic feel, and its functions are now performed satisfactorily. It is singular to notice in these cases how the general health improves under mercury. The patient loses the habitual earthy expression, becomes florid, and gains flesh; his spirits improve as the local affection declines, and he ceases to be liable to relapses."—*Brit. Med. Journ.*, August 17, 1872.

---

29. *Treatment of Syphilis.*—The reading of the above paper drew from M. Ricord the following speech:—

"There is one question which comes before the medical man very frequently: Can syphilis be cured radically? That is the question which we will consider. There is an immense quantity of venereal disease cured—clap, swelling of the glands, soft chancres, warts—all these 'accidents,' not belonging to syphilis, and not associated with secondary symptoms, being radically cured. Since these have been distinguished from real syphilis, there have been great differences in the treatment of them, and they have been radically cured. Doubts have been raised whether real syphilis can be radically cured; and those doubts are not new. Mercurialis thought that it was liable, even after the lapse of years, to break out again; and the doubts remain in the minds of many whether it can be cured radically, or whether it can be cured only temporarily. Well, that doubt may remain until I establish before you that the law regarding syphilis is the same as the law regarding the smallpox, measles, and such like. You can have at the one time only one smallpox, only one cowpox; and as, just so long as the cowpox influences the system, you cannot have another smallpox or another cowpox, so in syphilis; for, as long as the patient is suffering under the syphilitic diathesis arising from an indurated chancre, he cannot have another indurated chancre. The application of this law is that, while a man is suffering under the effects of secondary symptoms, he cannot have a chancre of an indurated character; so that if you want to know whether the system of a man is altogether free from syphilis, you can do so by inoculating him with an indurated chancre; if it take, he was free; if not, he was insusceptible. That is a great point to be reached in the science of medicine. I say, and say distinctly, that syphilis can be radically cured.

"Now as to the case of syphilis in the first stage—the primary sore. You have first to find if this be really the hardened chancre, and it comes with the swelling of the glands; but with it the glands never suppurate. I at once institute the mercurial treatment. Now, there is one point here upon which there is a difference of opinion, for some think that you cannot prevent the secondary symptoms; but I say that if the treatment be well done and soon done—and this is most important—you can prevent the first bursting out of the secondary symptoms. Why it is not prevented is, that the treatment is applied too late in the first instance, and the secondaries often come before the treatment of the primary is commenced. But if you make the treatment of the primary early and effective, the secondary will not appear; I can give you warrant for that. The best treatment for the secondary symptoms is the mercurial, and it must be continued and continuous. In Germany, and in other places as well, the treatment of the secondary symptoms is not continued long enough. You should choose a treatment which does no harm to the constitution, and continue it for five or six months, and you will have very few cases of relapse; and, after the mercurial treatment is finished, go on for another six months with iodine. When a person comes to me, I tell him that he will have to continue under treatment for twelve months. If he will, he will; but if not, then I say at once 'good-bye.' But then, you know, there are complications. The treatment I have given you is for syphilis arising in a person who is otherwise healthy, and there is then but one enemy to fight against. But in other cases you may have, in addition, scrofula, or an otherwise bad constitution. Well, then the case is not the same; for many of these constitutional disturbances are interfered with by the syphilitic treatment. In many of these cases, the syphilis is the second thing to look at, and you must begin with the constitutional disease first; you must attack the strongest enemy first, and he sometimes waits until you come to him before he opens his attack. Then you must come on gradually with your syphilitic treatment; and that which I prefer in complicated cases is iodide of mercury, which causes little diarrhœa. One capital treatment is that of rubbing in—it is easy and effective. But there are cases in which the rubbing cannot be employed. In the next stage, I employ iodide of potassium. I use large doses of this, up to 60, 70, 80, and 100 grains a day, and even more. I have made experiments with this; and I have found that, half an hour after the dose has been given, it has passed through the urethra; and it is in reality a sort of broom to the blood. The supply must be kept up. In secondaries, a treatment partially of this iodide and of mercury has its advantages. I have had the potassium stop doing good, and I have gone back to the mercury with good results. That is what Mr. Acton has said, and I quite agree with him. When syphilis has lasted a long time, and has had great effect upon the constitution, it somehow disappears, and leaves the patient suffering from a complication of diseases which may have been existing before. Well, then, you must stop all syphilitic treatment, and repair the deterioration of the blood by iron and bark. Mr. Acton spoke about the use of bromide of potassium; and I agree with him in its use, for it is a splendid remedy for a complication of syphilis in some cases—in syphilitic diseases of the brain and nervous system; but you cannot depend upon it as an antisyphilitic remedy.

"Now I would impress you that you can tell your patients that this terrible disease can be radically cured if they have the courage sufficient to go through the treatment, and their physician have the courage to go through it with them. I again thank you for the cordial reception you have given me."—*Brit. Med. Journ.*, Aug. 17, 1872.

30. *Treatment of Syphilis by Means of Hypodermic Injections of Corrosive Sublimate in the form of a Chloro-albuminous Solution.*—Dr. Staub, of Paris, has published, under the above head, the results of a most interesting series of experiments. The object of Dr. Staub was to avoid the local accidents caused by hypodermic injections of sublimate, and also to be able to employ stronger doses. This he effected by means of an albuminous solution of sublimate in alkaline chlorides, according to the principles laid down by Gubler, Mialhe, Barensprung, etc. The formula for injection deserves to be carefully noted. Sublimate and chloride of ammonia, of each 20 grains; chloride of sodium, about 62 grains; distilled water, 20 grains. After filtration the whole is mixed up with an albuminous solution (white of an egg, water 4½ drachms). This mixture produces no local inconvenience; it contains 5 milligrammes (about $\frac{1}{33}$ grain) to every 20 drops. The results of treatment, states Dr. Staub, have been very favourable. In the forty-four cases related the duration of treatment varied from seventeen to thirty-four days, with one centigramme ($\frac{1}{6}$th grain) of sublimate injected each day. The author comes to the conclusion that the hypodermic method, with the chloro-albuminous solution of sublimate, can and ought to be transformed into a general mode of treatment of syphilis; that it will take the first place in the therapeutics of syphilis; and that it may be applied to all cases (syphilitic or not) where a mercurial treatment is indicated. —*The Lancet*, July 20, 1872.

31. *Strictures of the Urethra.*—The following instructive remarks by Prof. Oliver Pemberton (Address in Surgery before Brit. Med. Assoc., Aug., 1872), on this subject, will, we are sure, be read with interest.

"It is to me remarkable, but it is true, that the views entertained by the highest surgical authorities of the day, differ on no subject so widely as on the particular system they adopt and recommend in the treatment of stricture. Simple dilatation and rest, I am thankful to say, have had a great following, and, if I mistake not, will yet rise into higher position. The main quarrel is between the advocates of internal as opposed to external division. The late Professor Syme (*Stricture of the Urethra*, p. 21, 1855) thought he had effectually put an end to the use of those 'dreadful engines,' as he termed M. Reybard's instruments; but he was mistaken, for strictures of this day are both cut, split, and torn; and new engines for the purpose multiply, as if the great surgeon had never lived to speak of plunges in the dark with caustic, or of ripping open the urethra by internal section.

"Stricture may fairly be defined to be a diminution of the normal diameter of any portion of the urethral canal; and as it must be admitted that the existence of any stricture, however slight, from whatever cause proceeding, and of whatever nature, may sooner or later give rise to serious consequences in the condition of either the bladder or kidneys, it is needful for the physician to discover it and cure it as soon as possible. But the real question is in reference to this word cure. Have we to deal with a simple stricture that has resulted from inflammation of the lining membrane of the urethral canal, or with a stricture, originally of this kind, which has been aggravated and increased in extent by ill-considered surgical proceedings?

"For the first, there is a cure by simple dilatation. For the second, there properly is no cure. Once organic stricture, always organic stricture, is my belief. Whenever the lining membrane of the urethra has been injured, whether by accident, disease, or by bad surgery, the spot will contract and establish permanent stricture, and I do not believe that the materials constituting such cicatricial narrowings are ever absorbed.

"If you endeavour to restore the normal calibre of the urethra under these conditions by ever so well considered a system of dilatation, my opinion is that the contraction will return sooner or later with increased vigour, the natural elasticity of the canal being gone; in other words, dilatation will not effect a cure, and never does effect a cure.

"But dilatation, if it be well and properly carried out, will protect the patient against the occurrence of those diseases which, dependent on individual health and mode of life, arise either rapidly or slowly in all cases of stricture. The degree to which it is necessary to carry this may fairly allow of discussion; for I have ever before my mind the conviction that the very means made use of to effect the so-called cure, may become the certain cause of the continuance, and, in many cases, of the increase, of the malady.

"I think it will be admitted that the tendency to narrowing in cases of stricture, differs very markedly in individuals. Some may show few signs of change during many years, others, especially those arising from the effects of laceration by direct violence, certainly, surely, and often rapidly increase. In all cases, treatment by dilatation is necessary; but I doubt myself whether it is needful always to endeavour to restore the standard of the canal to the utmost of its original extent. I believe that there are many cases which admit of being maintained at a standard short of this, depending, however, on the facility with which the contraction yields, and its rate of increase subsequently. And it must never be forgotten that when once this treatment by dilatation has been commenced—no matter how carefully or how thoroughly it may have been done—it will have to be continued, whether at the hands of the surgeon or of the patient, more or less during life.

"For my own part, time being given, I do not believe that there is any stricture through which an instrument cannot be passed by a skilful surgeon. This being so, treatment by gradual dilatation follows; and in my judgment this should be by the silver catheter, as the safest, the simplest, and most certain instrument in the greatest number of hands yet given to us, *bougie à boule* and *bougie olivaire* notwithstanding. If the induration be cartilaginous non-dilatable, or if there be fistula, the treatment by external division on a grooved staff should be adopted as speedily as possible.

"Entertaining this view of the permanence of the changes established in the urethra by injury or disease, I am not very likely to favour any internal severance of the lining of the canal, whether by Mr. Holt's method of so-called 'splitting,' or by any form of internal cutting. I believe a wound is produced just as much in the one case as in the other. I regard those methods as artificially inducing the very conditions which I lament should result from almost unavoidable causes; and I further believe that a shut-up wound on the internal face of the lining of the urethra, is attended by dangers, from which an open wound on the outside face is comparatively free.[1] I have had occasion to divide the urethra after Professor Syme's method in upwards of thirty cases. In one case only was there a fatal ending, and this from pyæmia. In no case was there a relapse, provided that an instrument was passed from time to time, the frequency of this being determined by individual tendency to re-contraction, once a month to once in three months being about the average; and by this means the calibre of the urethra was without difficulty maintained at its original standard. All the cases that I have seen, save one, have required this continued resort to dilatation, and will require it, in my judgment, more or less, during life. For there is no more a cure by this, than by dilatation or splitting. In the case that did not require it a fistula remained permanently in the perinæum, letting through a little urine, the general stream flowing by the urethra, which at the end of twelve years shows no disposition to contract.

"If the induration of the urethra, and narrowing, be of such an extent as to preclude the idea of dealing with it by external division, I prefer to tap the bladder by the rectum. I do not feel inclined, at present, to divide from the bulb to the meatus: and this literally must be the length of an incision in many of these long-standing cases, if the entire disease is to be dealt with.

"There are numbers of these inveterate cases wholly unsuited to external division; but they are eminently calculated to be dealt with by a method which deviates the course of the urine to another channel, in order that the rest may heal the fistulæ, and absorb much of that adventitious material blocking up the natural urethra, which can then readily be found, and have a standard established almost without resort to dilatation.

---

[1] I will, with Sir H. Thompson, admit its use in narrowings at the external meatus.—*Pathology and Treatment of Stricture.* Third edition.

"I frankly say that I do not believe that either internal or external division of any urethra will cause the healing of fistulæ in the groin, buttock, and perinæum, where a man passes his urine, as it has been graphically described, like a watering pot. (See Discussion: Medical Society of London: *British Medical Journal*, November, 1870, p. 590).

"Surely relief by the rectum will stand comparison with all the manœuvres that have been suggested from the days of Hunter to Grainger, and from Grainger, who, by the bye, belonged to us here, to Gouley and Wheelhouse. I cannot conceive why a patient is to sustain—sometimes for hours together—the distress belonging to hopeless attempts made to trace, in that stage of the disease, an impracticable canal, when the chief cause of the malady—the flow of urine—can be reached and diverted in a moment. Since Mr. Cock published his views (*Medico-Chirurgical Transactions*, vol. xxxv. p. 153), now just twenty years ago, I have had many opportunities of seeing the results of this proceeding.

"I am able confidently to state that it is wholly free from danger. Indeed, I can scarcely conceive death following as a direct result of the operation. So little fear of the proceeding had one of my patients that he has been tapped at least six times for the relief of fleeting attacks of retention, dependent on a rapidly distended bladder, unable to empty itself in the presence of long standing organic stricture. I have seen him almost within a day or two afterwards as if nothing had occurred. Further, no fistula remains, for the opening in the rectum invariably closes after a few weeks.

"I have left in the silver canula for three weeks, and have not found inconvenience from its presence; indeed, it appears to me that one of the greatest arguments in favour of its adoption exists in the fact of the position of the canula, which, whilst certainly securing the emptying of the bladder, is wholly removed from the urethra. I am strongly myself of opinion that many urinary cases terminate fatally from urethral irritation, set going and kept up by an instrument retained in the canal in its length.

"Some persons are very tolerant of tied-in catheters, whilst others, dependant on a certain idiosyncrasy, cannot sustain with impunity the simple introduction of an instrument. I saw a case in a young man which all but ended fatally from epileptic convulsions, induced by a first catheter; whilst the single introduction of a lithotrite in a man of 77 to measure a large smooth stone that had been carried with impunity for years, set up such an attack of cystitis that death ensued. I was very much impressed by a case in which a man, suffering from complete paralysis from the bladder downwards, owing to concussion of the spine, had a silver catheter tied in his bladder. He appeared sinking fast, and the most profound irritation of the bladder was established. I directed the urine to be drawn off every eight hours, and he began from that moment to amend, and ultimately recovered. Here, doubtless, the true explanation lay not in idiosyncrasy, but in the fact of the existence of disease from the injury. You may leave an instrument in the bladder for years from the perinæum, but you cannot do this with impunity and traverse the length of the urethra. Morbid sympathies become excited in connection with the urethra, which are not produced by the introduction of instruments into other mucous channels.

"In what I have said, I have urged the adoption of tapping by the rectum, as affording assured relief to the most inveterate forms of stricture. And in considering the treatment of this disease, I have hitherto limited my observations to cases of stricture of the urethra *per se*, not to those complicated by retention of urine. I must equally urge it, however, as the remedy most reasonable for almost every form of retention. It is the absolute cure of spasmodic stricture: and if, in any given case arising from this cause, after one good effort has been made to obtain relief by ordinary means, there is no success, it should be carried into effect. If retention be present with an impermeable urethra from organic stricture, a double necessity supports its selection, whilst I have yet to learn that it is inadmissible in the retention of old people from enlarged prostate. I know that it can be accomplished in these cases, but of course not so readily as if the rectum had only its ordinary contents; and I am quite satisfied that far less irritation would be produced in the majority of these diseases, where death so often directly results from the effects of instrumental measures, by the presence, at the most depending part of the bladder, of a harmless tube, calculated to secure the removal of all urine secreted, and thus master that inevitable decomposition which is not overcome by any other method in use, for the simple reason that one and all fail to empty the bladder. If the membranous urethra bulge behind a stricture, or if an abscess opened in the perinæum suggest a ready path to the bladder, by all means let a female catheter effect, through the perinæum, what otherwise, I maintain, can be accomplished by the rectum.

"Some years ago I asked the question, 'Can the urethral canal be permanently restored whenever any complete and considerable portion of its length has been entirely destroyed?' I believe the answer must yet be 'No.' I had then a boy of sixteen, with at least two inches completely destroyed by burning; and, believing this, I established him with a silver perinæal tube, through which he now (aged 27) passes his urine without trouble; but there is nothing in the growth of the parts that tempts me to interfere, for I know the whole circle of the canal must be gone.

"I think, however, that if only a streak of mucous membrane lingers about the part, an efficient connection can be re-established even after the lapse of many years.

"I saw in the early part of this year a patient, aged 30, who had sustained, eighteen years previously, such a laceration, that two inches below the meatus was a fistulous opening into the urethra, three-quarters of an inch long. The canal was pervious from the meatus to about one inch above the bulb, where was a second small fistula; then, the canal was obliterated for an inch, and a third fistula, placed just at the commencement of the membranous division, gave exit to all his urine. For eighteen years, then, the urethra from this spot had been unused. I first closed the penile fistula, paring the edges, which looked beautifully in apposition for some days, and then came apart as usual. But by clipping the penis with a self-acting spring, on the principle of the *serre fine*, the edges were admirably united. Then I laid the lower fistulæ into one, dividing all the hard textures between them, and passed an eight catheter, and for forty-eight hours tied it in the bladder. After this I passed nine daily. The patient learned to pass it in a week himself; and at this time the canal is in excellent order, with the introduction once a week. Now, I do not think the roof of the urethra was destroyed here, and hence the reason of a success which I did not expect.

"In reference to the repair of penile and scrotal fistulæ, I would remark that they can alone be treated satisfactorily by the urine being drained through the rectum, or, as here, through the perinæum. Even then, union by first intention is a myth; but union can be obtained by keeping the granulating edges together by some artificial means, at the same time that vivacity is maintained in them by the use of the acetum lyttæ.

"And now, permit me to indulge the hope that the illustrations I have been enabled to place before you of modes of practice have not been devoid of interest."—*British Medical Journal*, August 10, 1872.

---

32. *Lithotomy.*—Prof. O. PEMBERTON states (Address on Surgery), "Up to the early part of the year 1868, I had invariably performed the lateral operation of lithotomy in all cases and at all ages, and had encountered that good and ill luck that always, sooner or later, disturbs the statistics of the most successful or the most unfortunate of operators who take all that come before them. I had reached my sixtieth case. Of this number, thirty-five were under twenty years, and but one had died from the operation—a child of four, a complicated case, with stone both in bladder and urethra. On the remaining twenty-five, four had died at 79, 59, 56, and 53. Surgically, there was nothing to be regretted concerning these, save their deaths; for about them all were condi-

tions favouring a bad rather than a good ending—conditions that happen with stone, at all times, and to all people, and will happen again; so I need not touch on them further now.

"In all this I had used the single knife and the laterally grooved staff, and I did not think then I should use any other instruments as long as I continued to operate. But what happened? I cut a boy of eleven, and extracted an ordinary-sized stone, without, apparently, complication of any kind. Hemorrhage followed, of such severity that it was with difficulty controlled, and death from its immediate effects took place within twenty-four hours of the operation. I could find nothing in the *post-mortem* examination to account for the bleeding. It is true he had but one kidney, but that had nothing to do with his death. It was clear the cutting did it somewhere; and I naturally thought I should like, in the future, to extract such a stone as the one I then removed with less of the cutting in the dark, if possible. Accordingly, I turned to median lithotomy. Allarton, who practised near here, had delivered a lecture on the subject of lithotomy simplified, in the Sydenham College, in 1854; and I was much struck by his arguments as to the capability of dilating the neck of the bladder without incision. I felt satisfied that, for bladders within reach of the finger, and for small stones, if not for all, there should be escape from the fear of uncontrollable hemorrhage, though I had never tested his proceeding in the living subject. Since, I have had an experience of twenty-five cases. Of these, twenty have been of ages from two to twenty years, with not a single death. Of the five, of ages from forty-six to sixty, one died of peritonitis.

"I perform the operation in the following way. I open the urethra, just behind the bulb, on a centrally grooved staff. Along this, I pass into the bladder a tapering probe-headed gorget, withdraw the staff, and, taking hold of the handle of the gorget, pass the finger gently along its groove into the bladder, letting it dilate as it goes, and so take the place of the receding guide.

"Now, I know that many believe that this dilatation means laceration. It has, inded, not very long since been described as 'complete rupture and laceration' (Mr. Teevan: *Lancet*, vol. ii. 1870, p. 237), and as 'unsurgical and dangerous.' I answer this statement, which I venture to characterize as eminently reckless, by a positive contradiction as to facts.

"I have cut enough cases by the ordinary lateral method, and am still cutting them, to know the difference between laceration and dilatation. I am quite satisfied that my finger passes into the bladder without laceration in the operation I have described. I feel the entrance gradually narrow itself into a mere ring, which encircles and equally grasps my finger on all sides. Through this ring pass the forceps; through this ring passes the stone, and any number of stones, or any fragments of stones; and there is no laceration, unless the stone be too large for the proceeding, or violence have been used.

"I hold that it cannot be necessary to make incisions to the same extent to remove a body the size of a pea, as we should make for one of the size of twenty peas; and, further, my conviction is that, whilst in all ordinary dangers, the median operation as compared with the lateral, is simply equal, in two it is immeasurably less. These are the dangers from hemorrhage, and from prolonged recovery. The danger from hemorrhage in the median operation can only arise from a central wound of the bulb. It is not unlikely to take place, and did occur to me once in the twenty cases, and was readily arrested; for it must be borne in mind that the source cannot be far away, and so happily cannot require the use of that most hateful of all appliances—a plug for the wound. As to recovery, the exception is to find any constitutional disturbance at all. The urine is retained and passed naturally. I would like to ask if any one ever knew a patient pass his urine naturally with a 'lacerated' neck of bladder? and the wound is healed mostly within a fortnight.

"I shall be prepared for it to be said of my advocacy of median lithotomy—'The statistics of your own cases are against you.' My answer is, 'Statistics are not everything.' A case may end just as successfully one way as another, though the troubles on the journey differ widely, and no one will question that lateral lithotomy in children is eminently successful. But every operator who has sufficiently tried any given two methods of procedure, has a right to say which of the two he prefers; and therefore it is that I say, when I reflect on the anxiety that I endured in watching the threatenings of mischief in children cut by the lateral operation, I rejoice that I have cause for it no longer, notwithstanding the general good fortune that attended my practice with that method.

"And now as to the cases where the median operation should not be selected. In any instance where the finger is not likely to reach the bladder, so that instrumental dilatation would be required, the lateral operation should be preferred. The reason I use my finger is because I have more control over it than over an instrument. I can regulate the one, not the other. I would sooner cut than lacerate at any time, and I consider that the use of instrumental dilatation in this operation means laceration. You may use it, on and off, with impunity, but it is a most destructive instrument—reviving all the dangers of the discarded Marian. I attribute the peritonitis, which carried off my single fatal case, solely to the laceration of the neck of the bladder that of necessity followed its use. I repeat, the only dilator must be the finger, and so long as the neck of the bladder can be widened by this sufficiently to allow of the removal of a stone without laceration, I shall deem it a part of my duty to advocate the adoption of this form of median lithotomy.

"I hope, however, my observations will not be misunderstood. I am second to none in admiring what Cheselden practised, and what Liston and Fergusson have brought to perfection—the lateral operation for stone. I have been surrounded during the whole of my professional life by teachers and colleagues who have had unusual opportunities for practice, and who have realized brilliant successes in this very operation; but, in my opinion, it is not the most desirable operation to perform for all stones, at any age and under any circumstances, as some would have us believe."—*British Medical Journal*, August 10, 1872.

---

33. *Subperiosteal Resection of the Elbow.*—M. OLLIER, of Lyons, has just made known the results of subperiosteal resection of the elbow in forty-eight cases, twelve of which were traumatic, and the others caused by chronic arthritis. M. Ollier states that, with proper care and skilfulness in dissecting the entire periosteal sheath, the bones are not only reproduced in their continuity, but with their heads and articular tuberosities, so as to permit the play of the joint in all its movements. It is necessary to employ minute precautions in the after-treatment for obtaining the above results. Slight movements must be made at an early time with the joints. Anchylosis is not to be dreaded, but rather too great mobility of the joint, especially in individuals of from forty to fifty years of age. In these cases the bones must be cut to a certain length, so as to avoid such mobile articulations.—*Lancet*, August 24, 1872.

---

34. *Traumatic Tetanus successfully treated with Chloral and Bromide of Potassium.*—Mr. ALEX. FERGUSON reports (*Edinburgh Med. Journ.*, July, 1871) a case of this. The subject of it was a man, æt. 20, whose hand was injured by a circular saw. "The injury was of such a nature as to necessitate my amputating the thumb close to the hand. The operation was done under chloroform, and dressed antiseptically with the utmost care. Under this treatment it cicatrized kindly until the morning of the tenth day, when I was urgently called to his house. I found to my horror the jaws firmly clenched, the characteristic 'risus sardonicus' distinctly marked, and the body slightly opisthotonic. The wound was inflamed and painful, and the healthy secretion dried up. A large linseed poultice, slightly carbolized, was applied, and 30 grs. of chloral hydrate given, its sedative effect being promoted by a whiff of chloroform. In the evening, symptoms aggravated, the opisthotonos being more complete. Repeated the chloral, increasing the dose by 10 grs. Next morning patient is decidedly better, complains chiefly of præcordial pain extending through to the back, and probably diaphragmatic. Continued the chloral treatment as follows: 40 grs. ter in die, alternately with 30 grs. bromide of potassium bis in die, to every dose of which are added 10 grs. of chloral.

Under this plan of treatment, the effects of which resembled chronic alcoholism, the spasms were kept at bay. The only additional treatment was the hot bath with mustard for the first four nights. . . . . There is one incident of pathological significance that occurred in the management of this case. One morning, when dressing the wound, I passed my finger along the cicatrizing surface to repress exuberant granulations. It came in contact with a sharp point. This I found on examination to be a small sequestrum of comminuted bone, the removal of which was followed by rapid cicatrization, and a very marked remission of the symptoms. Such was the treatment exclusively adopted as far as medicine is concerned. The dietary consisted of farinaceous articles, with beef-tea and milk, and small quantities of whiskey and soda-water.

"During four weeks this patient took 120 grs. daily of chloral, and 90 grs. bromide of potassium (in the aggregate, 3600 grs. of the former, and 2700 grs. of the latter), without any appreciable effect on the general health beyond transient loss of memory, and the ordinary manifestations attending intoxication. He is now able to walk through his room, but until every sign of spasm has disappeared, he will continue to take the chloral."

35. *Aspiration of Morbid Fluids as a means of Diagnosis and Treatment.*—Dr. Dieulafoy, in a communication to the Academy of Sciences, June 24, 1872, sums up the results of the various interesting experiments which he has been conducting for two years with his capillary aspirator, an instrument which is now being extensively used in Paris with the very best results. M. Dieulafoy strongly insists on the use of the aspirator as a means of diagnosis and treatment. It serves, in the first place, to show with certainty the presence, seat, and character of various pathological fluids, and also to dry up the source of such fluids. Dr. Dieulafoy, emboldened by the results obtained, does not hesitate in asserting that it is always possible to reach with certainty, and with no kind of danger, any collection of liquid, whatever may be its situation and its nature; that the aspirations may be frequently repeated in the same position without any inconvenience, and almost always with the effect of drying up the source of the fluid. He lays down the following law as the result of his experience: When a fluid, whatever may be its nature, gathers in a serous cavity, or in any organ, and when that cavity or that organ is acessible without danger to the patient, our first care should be to withdraw that liquid; if it again forms it must be again withdrawn, repeating the operation frequently, if necessary, until the serous membrane is exhausted by a purely mechanical and quite inoffensive means, and without attempting to modify the secretion by irritating and sometimes dangerous agents.

The following is a list, divided into three groups, of the various diseases to which M. Dieulafoy's aspirating method has been applied: 1. Fluids accumulating in a serous cavity: hydrocephalus, hydrorachis, pleurisy, pericarditis, hydrarthrosis, synovial cysts. 2. Fluids formed in the deep parts of organs: abscesses or hydatid tumour of lungs, abscesses or hydatid of liver, liquid tumours of the spleen and of omentum, ovarian cysts, retention of urine, strangulated hernia of the intestine. 3. Liquids formed within the cellular tissue of various regions: congestive abscess, bubo, perinephritic phlegmon, iliac phlegmon, periuterine phlegmon.—*Lancet*, August 24, 1872, and *Rev. de Thérap. Med.-Chir.*, August 1, 1872.

36. *Strangulated Inguinal Hernia Reduced after Aspirating Puncture.*—Dr. Léon Labbé, Surgeon to the Hôpital La Pitié, communicates to *The Lancet* (July 20, 1872), the following interesting case:—

In the night of June 20th, Mr. D., aged seventy, an exceptionally strong and robust individual, after a violent fit of coughing felt an intense pain in the right inguinal region. This was followed in a few minutes by nausea and vomiting; whilst a somewhat large tumour showed itself in the right inguinal region.

On the 21st, at 6 P.M., I first saw the patient, together with his ordinary medical attendant, who had employed taxis with great care but to no effect. I then tried taxis myself, but was equally unsuccessful. The nausea and vomiting still continued; pulse 75. Taking into account the circumstance that strangulation dated only about eighteen hours, and that probably the anatomical lesions would be very slightly advanced, I without hesitation proposed puncture with the aspirator, and without further delay I introduced the No. 2 needle. About ten grammes (two drachms and a half) of a yellowish liquid immediately escaped, together with a quantity of gas which I cannot exactly estimate. The tumour, which was as large as the fist, flattened immediately; and a very gentle pressure exerted for one minute near the neck of the sac caused complete reduction of the hernia. The patient felt immediate relief, and expressed his satisfaction. During the few hours which followed—from 6 to 11, and more especially between 8 and 11 P.M.—there was a little vomiting, and more particularly nausea. The patient was somewhat feverish, and had slight rigor. I had administered, as I always do after reduction of hernia, whether by taxis or operation, pills of the gummy extract of opium (each containing one centigramme—one-sixth of a grain—to be taken one every two hours, so that ten or twelve centigrammes may be absorbed in twenty-four hours), with the object of bringing on paralysis of the intestines. At 11 P.M., the symptoms above alluded to all disappeared, and from that time the patient enjoyed the most complete comfort.

*June* 22. Pulse 60; countenance normal; scarcely any tenderness in the abdomen over the inguinal region.

23*d*. Three natural stools; no pain or fever; appetite excellent.

Eight days afterwards the cure, which had been evident even on the third day, had become quite permanent. The patient's health is now excellent.

---

37. *Case of Gastrotomy.*—Dr. FRANCIS TROUP records (*Edinburgh Medical Journal*, July, 1872) a very interesting case of this. The subject of it was a man, æt. 50, who suffered from loss of appetite and gnawing pain at the epigastrium after taking food. For a year afterwards, vomiting of bloody-looking fluid containing particles of food set in. No treatment relieved these symptoms; the quantity of food rejected increased; blood was brought up in small nodules, like "boiled liver," as patient described it; and the act of swallowing was slowly performed, and excited a peculiar suffocative cough.

No tumour could be felt, but a bougie passed down the œsophagus encountered a constriction at lower third of sternum; when this was passed, a second, an inch or so lower; and then it found free entrance into the stomach.

During many months, nine at least, attempts were made to keep the passage open by bougies, the patient himself learning to introduce them; then, as increasing difficulty of passing them was experienced, elastic catheters of gradually-diminishing calibre were tried, and a certain amount of food introduced in this way. Nutrient enemata were also freely used. By and by the canal became completely closed, and there was constant hawking and coughing up of clear, tenacious, ropy mucus, and for a month before death patient was almost entirely supported by the enemata. During the first part of this month patient complained much of hunger; during the last fortnight, only of a thirst, which was something dreadful to bear. He was anxious to live, if possible, or, at all events, to have something done to relieve this tormenting thirst.

Dr. T. explained to him that it was possible to open the stomach and to introduce nourishment; but that this could not possibly cure him, and might speedily prove fatal; but if he survived, his thirst would probably cease. He decided upon the operation, which was accordingly performed by Dr. T., assisted by Dr. David Lyell and John Lyell. "A straight incision, three inches long, commencing a little below the extremity of the xiphoid cartilage, was made to the left of the middle line of the abdomen, and midway between it and the costal cartilages. The thin abdominal walls and peritoneum were easily cut through, and, guided by the liver edge, search was made for the stomach—a somewhat difficult matter, owing to the tenseness of the abdominal parietes, and the shrunken condition of the viscus itself. Pulled down and firmly held by forceps, an opening into it was made, its edges stitched to the parietal incision, and a tracheotomy tube of moderate size, and with a large shield, secured in the wound. Milk, in gradually increasing doses, and stimulants, were now easily passed into the stomach, and the three remaining days of the man's life were spent in comparative comfort.

"The operation scarcely raised the pulse, and the patient repeatedly expressed the opinion that it was worth while having undergone it, were it for no other thing than the quenching of his thirst. A post-mortem was with difficulty obtained. The cardiac end of œsophagus was found converted into an epitheliomatous mass, through which, even with the assistance of daylight, no passage could be found. The stomach was very small, and had been struck about its middle. The opposed serous surfaces of stomach and parietal incision were in parts adherent, and the incision itself, in all its length, healing. The peritoneum had not inflamed—a sufficiently remarkable fact, considering the free handling to which it had been subjected."

38. *Gastrotomy in Cases of Internal Strangulation.*—Dr. Delaporte, in an inaugural thesis just published in Paris, having carefully compiled and investigated a large number of cases bearing upon the above subject, comes to the following conclusions: Gastrotomy, far from being an invariably fatal operation, has afforded as numerous successful results as other major operations. Gastrotomy, which is pointed out by theory as the best surgical treatment of internal strangulation in the majority of its forms, should therefore hold its place in practice. Gastrotomy, which offers as many chances of success as enterotomy, and which gives more complete results of cure, should always be preferred to enterotomy in cases where some doubt exists as to the cause of strangulation or the choice of an operation. Gastrotomy, when once seen to be necessary and decided upon, must be performed as soon as the symptoms leave no doubt as to the existence of internal strangulation; and as early as possible, in order to frustrate the development of peritonitis, the formation of adhesions, gangrene of the intestine, and exhaustion of the patient. The opening of the abdomen must be made in the mesial line, and largely, so as to permit free access to the cause of the strangulation. If the strangulation cannot be reduced the operation must be terminated by opening the bowel in the most favourable situation, and the establishment of an artificial anus through the primary incision. Gastro-enterotomy would thus be performed.—*Lancet*, Aug. 31, 1872.

39. *Extraction of Foreign Bodies from the Ear.*—M. Miot remarks that the extraction of foreign bodies that had gained entrance into the ear, although generally accomplished with facility, had been the subject of a host of inventions now for the most part forgotten. Instruments had been constructed often of great ingenuity, as though it had been desirable to forget that the best mode of extracting a foreign body in this situation is to inject a stream of warm water, varying in strength and volume. M. Miot then proceeds to treat of foreign bodies in the ear under the three heads of liquids, soft bodies, and hard bodies. In regard to *liquids*, he remarks that they may either enter from without or be formed, as in the case of pus, in the ear itself. Otitis is often set up by the prolonged retention of water in the lower parts of the meatus, after a general bath. At the outset it is sufficient to pass down a small wad of cotton wool and keep it there for a few seconds, but if pus have already made its appearance it should be carefully and frequently removed. Various substances are often injected for the cure of deafness by quacks, as laudanum, ether, chloroform, etc., but if these are employed at all they should be very much diluted. M. Miot states that Mdlle. Cléret did much harm in many cases by the instillation of sulphuric ether in the pure state. As regards *soft substances*, wool, cotton-wool, peas, and many other substances are often met with, and these are generally extracted with facility, either with forceps or by injection of warm water. *Injudicious attempts to remove hard bodies* often give rise to distressing results. Whenever it is necessary to remove such with instruments, good light and properly constructed instruments, bent at a right angle and with delicate limbs, should be employed. It is better to wait than to perforate the tympanum, or do other serious mischief. Irrigation with warm water should, speaking generally, first be employed. The foreign body may occupy different parts of the organ, as the external part of the meatus, the osseous portion, partly in the meatus and partly in the tympanum, and finally altogether in the tympanum, where it may either be visible or invisible.

In the first case extraction is easy: care must be taken not to push it into the wider portion of the tube near the membrana tympani; but, if this should unfortunately happen, irrigation may be had recourse to with every hope of success. It must be recollected, however, that the tympanic membrane may be broken down if the current of water be injected too vigorously. Should this plan not succeed, Richet's modification of Leroy d'Etiolle's curette or M. Bonnafond's canula forceps may be employed, or one of the instruments that M. Miot has himself suggested. A slender rod, capable of having the last quarter of an inch bent at a right angle by means of a wire running up to the handle, but which can be introduced straight between the foreign body and the wall of the meatus, is often serviceable in cases of oval and irregularly shaped bodies. Rounded bodies are sometimes extremely difficult to extract. In one very troublesome case he used two-elbowed extractors with success. Bits of glass tubing may be best removed after a little judicious manipulation by forceps, with a good otoscope and suitable instruments: the use of these is preferable to injection. The cases where the body is partly in the tympanum and partly in the meatus, chiefly consist of those where pins and pieces of wood have been pushed in during ineffectual attempts at removal. He gives an instance where he removed such a fragment of a lucifer match by means of the sharpened point of an elbowed or articulated extractor. Lastly, the foreign body may be altogether in the tympanum, and either visible or invisible. He describes a case where, having recognized the presence of a foreign body (a button) in the tympanum, he attempted its removal by the injection of warm water, but the only result was so to displace it that it was no longer visible, and he was only able again to bring it into view by throwing in an injection through the Eustachian tube, and he then managed to extract it by a sound with a hook. Living animals may be extracted by irrigation, either at once or after the instillation of a little camphorated oil or weak solution of potash: if they have passed through, by a small orifice through the membrana, into the tympanum, the opening may be enlarged and irrigation resorted to. M. Miot states, in conclusion, that from clinical observation he is satisfied that a foreign body may remain for a considerable period in the tympanum without fatal results; and it is therefore not surprising that such a body may long remain in the external ear without occasioning appreciable symptoms. Secondly, it is by no means necessary to employ injections of warm water in *all* instances where there is a foreign body in the meatus, because some drops of water remain on the inferior wall of the meatus, and this collection may, when the patient is exposed to cold, prove very troublesome.—*Practitioner*, April, 1872, from *Abeille Médicale*.

40. *Comminuted Fracture of the Atlas.*—Dr. E. HAMILTON exhibited to the Dublin Path. Soc., an interesting specimen of the cervical vertebræ of a man, æt. 40, who had fallen from a height of sixteen or seventeen feet, apparently on his vertex, for there was no mark of injury anywhere else. There was a contusion on the top of the scalp, showing the great probability that he had fallen head foremost, and that his vertex had struck the ground. He was seen in the act of falling, and was therefore very soon after the accident attended by Mr. Colles, the resident surgeon at Steevens's Hospital, who was sent for to see him at the concern where the accident happened. When seen by Mr. Colles, he presented the appearance of collapse, which he (Dr. Hamilton) thought was peculiar, having regard to the injury. It was collapse characterized more by failure of the circulation than by what they should rather have expected to find—failure of innervation; for he rallied in a short time, recovering consciousness in a very few minutes after the accident, and was able to give an accurate and detailed account of what had occurred to him. This was a most important matter, to which he wished to direct the particular attention of the Society. The man was removed to hospital, and submitted to a careful examination. From a line an inch above the nipple down to the extremities, there was complete loss of muscular power, both voluntary and reflex. On irritating the soles of the feet, there was to be seen a slight flickering movement of the toes, but he attributed this rather to direct excitation than to reflex movement. A similar condition had been noted in other recorded cases. There was also a

complete loss of sensation from the nipple down, and they could draw a line across, which was the border line of sensation and anæsthesia. There was priapism. The surface was cold and clammy; the temperature was low, and the respiration was carried on by the diaphragm, the intercostal muscles being thrown altogether out of action. The pulse was below 40°. On examining the neck, they found the man's head thrown very much backwards, almost reminding one of opisthotonos. On passing the hand lower down they detected a prominent and tender spot, pressure on which caused pain; and, from the appearances presented, they hazarded the diagnosis, that there was a fracture or injury producing pressure on the cord at about the fifth cervical vertebra. He had complete power of the upper extremities; he had power of deglutition, and considerable motor power above the point indicated by the line. On the next day he presented somewhat similar symptoms. He rallied a little; his pulse rose in frequency, and the temperature was also a little raised. There was retention of urine; the priapism was continuous and even more marked, and he complained of a remarkable symptom, which he (Dr. Hamilton) could not satisfactorily explain, that at the line of junction between sensation and insensibility there was hyperæsthesia. He complained of extreme tenderness, of a feeling as if the part were burned if anything touched it, just at the border line. He sank, became weaker and weaker, and at last died apparently of asthenia, having survived the accident forty-eight hours. The temperature ranged from 85° to 98°. In making the port-mortem examination, the first thing that struck Mr. Colles on passing in his finger to detach the spine, was that the atlas was perfectly comminuted: a fracture traversed the anterior arch. The posterior arch was broken in two places; the right transverse process was broken, but the odontoid process was uninjured. Further down they found a fracture, with displacement of the sixth cervical vertebra. They found it thrown backwards, and the intervertebral substance torn across; the laminæ of the vertebræ were torn, and hence there was great pressure on the spinal cord. The peculiarity in the case was, in the first place and especially, the amount of injury done to the atlas, while the cranium was perfectly uninjured. It seemed as if the entire force was carried from the vertex to the atlas. It was most remarkable, also, that with this great amount of violence there should have been such a slight effect on the brain. The concussion of the brain passed off very quickly, which was greatly to be wondered at under the circumstances. The other symptoms were such as might have been expected from a fracture occurring in the neighbourhood of the sixth cervical vertebra.—*Dublin Journ. Med. Sci.*, May, 1872.

---

41. *Remarkable Case of Injury of the Spine.*—Mr. H. Grace relates (*Brit. Med. Journ.*, July 20) the case of a man, æt. 22, who, while at work on his knees hewing coal from a seam, was crushed by an ironstone weighing ten or twelve hundred weight, which fell suddenly on his shoulders; the weight literally doubled him up, forcing the head down between his thighs, and the perinæum close against the heels. It required the united efforts of three powerful colliers to lift the mass, by the aid of long iron bars, sufficiently high to allow a fourth to drag him from underneath—his own impression afterwards being that he lay there about five minutes. He was placed in this flattened condition in a cart, and carried to his home. A medical man who saw him found him cold, breathing in a short and hurried manner, with the pulse feeble and intermittent, and to all appearances rapidly sinking.

The first, second, third, and fourth lumbar vertebræ all appeared more or less implicated in the injury; both sensation and motion below the parts affected being utterly lost. One of the doors of the room in which the man was lying was soon taken down from its hinges, and placed under the mattress. With the aid of two men at his shoulders and two at his feet, extension was made; and the back resumed its normal position with a crack that was heard at a considerable distance. The breathing was immediately relieved, and the pulse improved by this reduction. The time that had elapsed from the occurrence of the accident was about an hour. The patient, not being satisfied with his medical attendant, sent for Mr. G., eight or ten days after the accident. Mr. G.

"found that the door above spoken of had been removed from beneath the mattress, and that, consequently, the sacking of the bed had sunk considerably in the centre; moreover he had been raised and held in an upright position daily, for the purpose of introducing the catheter; these two causes combined had again displaced the back. I had the door immediately replaced on the bedstead, and a second time made extension, and again restored the spine to its normal position. This restoration was almost instantly followed by a slight motion in the great toe of the left foot.

"I gave strict orders that he should remain still on his back, and that not even his shoulders should be raised on any pretext whatever. Sensation and motion gradually returned to the anterior portion of the left foot, leg, and thigh, and to the posterior portion, in a less degree, about half way up the thigh; and about a month after the accident, similarly to the right leg. During the first two months, it was necessary to pass the catheter daily; after which period, the urine began to escape involuntarily, and it has continued to do so up to the present day.

"Three months elapsed before he could move his legs tolerably in bed, at which period I turned him on his side, and found, on examination of the back, a small bed-sore just over the sacrum, utterly devoid of sensation, of considerable depth, the slough of which was a long time in separating.

"In another month he was able to sit in a chair, and to walk across the room by the aid of the various articles of furniture. His progress towards perfect recovery of physical strength extended over a period of two years and a half, when he was able to resume his work as a collier.

"His present condition as regards sensation has not altered in the slightest degree since the fourth month after the accident, and is as follows. The sensibility in the soles of both feet, and in the posterior portion of both legs, is much impaired; and around the anus, perinæum, inner part of both buttocks, scrotum, and penis, it is *entirely* destroyed. Although there is a slight sensation under pressure in the testicles, so complete is the absence of sensation in the buttocks, that when, last summer, he sat down on a garden-flue, ignorant of the fact of its being heated, his trousers were burnt through, and the skin completely charred, yet he was unaware of the fact till his wife noticed it, three days afterwards, whilst he was washing. The slough was somewhat deep, and the scar is still visible.

"Whilst at work in the pit, he frequently gets severe scratches and cuts on the soles of his feet, which he hardly feels. Each day, on his return from work, he regularly goes to the closet, and, by dint of powerful efforts, forces the fæces to pass when solid, for when liquid they are not retained. At this time, the urine runs involuntarily in a stream, though at other times it drips continuously into an India-rubber urinal which he wears permanently; but in neither case is there any feeling of the passage of fæces or urine.

"At the time of the accident, he was married, and the father of one child a twelvemonth old. Six months after the accident, in spite of the utter absence of feeling in the penis, he began to resume his matrimonial duties; and two children have been born to them since the resumption of the functions of his generative organs.

"The first loss of sensation and motion below the seat of injury was doubtless owing to the pressure on, or the solution of continuity in, the nerves forming the lumbar and sacral plexuses, the former of which evidently recovered its powers gradually during the first four months. The total loss of sensation can, I think, be only attributed to the breach of the pudic lesser sciatic nerve. Hence it would appear that, if the fact asserted by Günther—viz., 'that the erection of the penis in the horse entirely ceases on cutting the pudic nerve'—be correct, it has no analogy in the case of man; for here we have the pudic nerve evidently destroyed (as proved by the entire absence of all sensation in the perinæum, integument of the penis, etc.), and yet the power of erection is retained to such an extent as to allow fruitful coition. I cannot, therefore, but hold the opinion that the erection of the penis is due to the operation of the sympathetic system, the functions of which, I think, still remain in considerable obscurity. I take it there is very little doubt that the nerves of the sympathetic system may be regarded as conductors of impressions; and, this being the case, what more natural than the fact of dwelling upon the enjoyment to be derived from coition should cause a turgescence of the organ lasting sufficiently long for it to enter the vagina and there fulfil its purpose in the animal economy? Moreover, the sympathetic system seems in general to influence the processes of involuntary motion, secretion, and nutrition; and this, considering the fact of the continued secretion of the semen by the testicles, and its ejection on coition, accompanied by no diminution of the sensations usually accompanying the act, may, I think, be fairly considered an additional argument in favour of my opinion that the pudic nerve can have but very little to do with the erection of the penis; whilst the nerves of the sympathetic system, which have not suffered any material injury, are directly concerned in that erection."

---

42. *Transverse Fracture of the Second Piece of the Sternum, caused by a Blow with the Fist.*—An interesting case of this is under the care of Dr. DESPES, at the Hôpital Cochin. Neither the heart nor lungs appear to have been injured, but the fracture of the sternum is shown by crepitation, and the fragments may be moved one on the other.—*L'Union Médicale*, June 15, 1871.

---

43. *Ingrowing Toe-Nail.*—Dr. HENRY FINCH correctly observes (*Brit. Med. Journ.*, Aug. 24, 1872), that "neither of the cutting operations is at all necessary for the complete and rapid cure of ingrowing toe-nail. If a small, thin, flat piece of silver plate be bent at one edge into a slight deep groove, and, after the toe has been poulticed twenty-four hours, slipped beneath the edge of the nail, so as to protect the flesh from its pressure, and the rest of the thin plate bent round the side and front of the toe, being kept in position with a small portion of resin plaster passed round the toe, a speedy and almost painless cure will take place; and the patient, after the first day, has the additional advantage of being able to walk. I have followed this method in numerous cases with uniform success."

[This plan of treatment is by no means new. We distinctly remember having seen it advised years ago, though we cannot recall the proposer's name.

We have treated a number of cases by a still simpler plan, and one which we have found to be entirely successful. This consists in insinuating with a narrow-bladed knife some lint between the nail and flesh, and renewing the application daily. In the early stage, this treatment is all that is required; but when the parts are much inflamed, a poultice may, at the same time, be necessary, and, if fungous granulations have occurred, they may require some caustic application, as nitrate of silver or red precipitate.

The cause of this troublesome affection is not, according to our experience, any peculiarity in the growth of the nail, as is generally supposed, but is usually caused by careless cutting of the nails, by which a rough edge is left, which, forcibly pressed upon the flesh by the shoe, causes ulceration. By the simple treatment above described, we are persuaded the barbarous operation of evulsion of the nail may be dispensed with.—ED.]

---

44. *Means of Recognizing the Presence and Character of Metallic Substances in Gunshot Wounds.*—M. DESNEUX suggests the following proceeding, which he has employed in three cases. A flexible stem is covered at one of its ends with lint steeped in a solution of nitric or acetic acid, or simply vinegar. The lint is introduced into the wound for a few minutes, and then put into contact with a solution of iodide of potassium, so that reaction may take place. If there is any lead in the wound, the yellow colour of iodide of lead is immediately produced.—*Lancet*, Aug. 10, 1872, from *Bull. de l'Acad. de Méd. de Paris*, July 16, 1872.

---

45. *Nature of Melanotic Tumours.*—Dr. NEPVEN concludes, from his investigations of melanotic tumours, that the melanotic matter is immediately derived from the blood. This is proved by the fact of the existence of colouration varying from yellow and brownish-red to black in melanotic tumours; the presence of yellow matter and blackish granulations in the cells of the tumour

(plasmatic cells), and even in the capillaries, the glands and cutaneous epithelia being perfectly healthy. The alteration of the blood takes place locally in the tumour itself. Diffusion and hemorrhage are the two causes of the colouring matter from the bloodvessels. It is probable that the elaboration of the cells themselves accounts in some degree for the intensity of colouration, and the rapid metamorphosis of colouring matter. Melanosis is, therefore, merely an accident in certain tumours, and this would explain how some tumours are only partially melanotic. Part of the melanotic substance may be found in the blood, urine, and principal viscera in the form of colouring matter or a finely granulated substance. Several experiments of inoculation failed to reproduce melanosis.—*Gaz. Méd. de Paris.*

46. *Disease of the Maxillary Sinus.*—Dr. WILLRICH relates the case of a man, 45 years of age, who for some eighteen months had suffered from a projection outwards of the left side of the nose, and a frequent discharge from the nostril of masses of a cheese-like appearance, exhaling a very fetid odour. The diagnosis in the case was carcinoma of the septum narium. In preparation for an operation, the left side of the nose was split open, when it was discovered that the entire disease consisted in a distension of the thin shell of bone covering the left sinus by an accumulation within the latter of thickened pus, and the pressing the outer parietes against, and pushing outwards the left side of the nose, without the presence of any apparent alteration in the parts. The escape of the thickened pus was soon followed by entire healing, A similar case was in 1855 recorded by Maisonneuve.—*Centralblatt f. d. Med. Wissenschaften*, June 22, 1872, from *Deutsche Zeitschr. f. Chirurg.* i. pts. 1, 2, 3. D. F. C.

## OPHTHALMOLOGY.

47. *Cancerous Tumour originating in an Eye which had been long lost from some Inflammatory Affection.*—Mr. GEORGE LAWSON relates (*Royal London Ophthalmic Hospital Reports*, July, 1872) a very instructive case of this, and remarks in regard to it, that "it shows one of the evils, which may arise from a lost eye which is undergoing degenerative changes, is that it may become the seat of malignant deposit. It is true that instances of cancerous growths, originating in old lost eyes, are comparatively rare, yet they occur with sufficient frequency to show that the structural metamorphosis which usually, after a time, takes place in eyes which have been destroyed by accident or disease, is favourable for the production of cancer. A question naturally suggests itself, whether it is possible that the accidental loss of an eye may lead to such a series of inflammatory and degenerative changes as to render that eye liable to the development of cancer within it? In answer to this, I would say that I believe that accidental causes often determine the locality and the first outbreak of cancer; and, further, that if the cancerous affection had not been thus originated, many a patient might have passed through life without having given any evidence of a constitutional predisposition to the disease. In support of this statement, I would refer to the undoubted history so often given by patients, of the first outburst of cancer in different localities of the body. Cancer of the lip frequently originates from an accidental scratch; cancer of the scrotum from the irritation of soot; and cancer of the tongue will often commence at the point which has been fretted by a rugged tooth. In females the repeated history of a blow on the breast as being the first exciting cause of scirrhus, cannot be ignored. A very remarkable instance of how an accident may produce a wound which will assume a cancerous nature, occurred in a patient under the care of my colleague, Mr. Hulke, in the Middlesex Hospital. An apparently healthy man was smoking his pipe, when his little girl, whom he was nursing, jerked her arm against the pipe stem and caused the

end of it to penetrate the soft palate. The wound did not heal, but very shortly became the seat of epithelioma, which spread over the roof of the mouth, and down the pharynx, and ultimately destroyed his life. With these facts before us, it is impossible not to recognize the relationship between cause and effect. Possibly in all such cases there may have been a tendency to cancer in the individual; but I do not think it can be for a moment doubted, that accidental circumstances may give rise to an outbreak of a cancerous disease which might not otherwise have manifested itself.

"In the case which I have related, the cancer originated in an eye which had been long lost. The patient had no history of cancer in his family; he had been always a remarkably healthy man, and my impression is, that, if he had had his disorganized globe removed, he might have passed through life without cancer having been ever developed."

---

48. *Rheumatic and Gouty Iritis.*—In the current No. of the *Royal London Ophthalmic Hospital Reports* (July, 1872) are some interesting and just observations on this affection, by Mr. Jonathan Hutchinson, with the narration of numerous cases, and a summary of the opinions of standard authors.

"Rheumatic iritis," Mr. H. remarks, "is a disease which in this age of specialisms is very apt to be pushed to the wall. It is nobody's child. Dr. A., writing on rheumatism, does not mention the eye, and Mr. B., writing on the eye, dismisses rheumatism with contemptuous brevity. Yet an attack of this form of disease is not pleasant to bear, and many a patient would thank his surgeon if he had any efficient plan for its relief, and still more if he could say anything as to its prevention.

"Our ophthalmic investigators during the last twenty years have by no means been idle. Their attention has, however, been absorbed by the cultivation of new fields. The splendid revelations of the ophthalmoscope, the enticing problems as to accommodation and refraction, and the pursuit of pathological histology, have presented attractions which have led to a very natural, but yet undesirable, neglect of topics less novel and perhaps more vague. The result of this has been that, so far from the knowledge of the modern ophthalmic surgeon being better developed than that of his predecessors, in reference to the subject of my Report, it is in fact decidedly less so. Another circumstance has also contributed to throw arthritic iritis, etc., into the shade. I allude to the greatly increased willingness shown by modern pathologists to acknowledge syphilis as the remote cause of all kinds of morbid phenomena. To such an extent has this gone, that some intelligent observers are accustomed to receive the diagnosis of "arthritic iritis" with the utmost distrust, secretly believing that, if the truth could be got at, the iritis would be found, as usual, to be of syphilitic origin. For myself, I by no means share the suspicions to which I have just alluded. I believe most confidently that iritis due to the arthritic diathesis is a common malady, and that very many cases treated as syphilitic are really arthritic. I believe, further, that it presents several varieties of form, attended by clinical differences quite sufficient to permit of their being told out into separate groups with convenience to the surgeon."

---

49. *Lesions of the Retina in Albuminuria.*—M. Galezowski, in a communication made to the *Société Médicale d'Emulation*, January 6, 1872, maintains that there are two kinds of lesion of the retina in albuminuria—inflammatory lesions and those produced by fatty degeneration. He exhibited representations of each kind of lesion, and related many cases of albuminuria retinitis which were cured.—*L'Union Médicale*, Aug. 27, 1872.

---

50. *Condition of Vision in very Young Infants.*—Dr. L. Cuignet gives the results of his observations on the vision possessed by young infants. He thinks that the function of sight is progressive, being only imperfectly exercised for some months, and that the eye is very susceptible to light, this susceptibility passing off very slowly. He has carefully experimented on two infants. The whole of the first day after birth was passed in uninterrupted sleep. The

second day the baby opened its eyelids, but shut them and began to blink on exposure to the light from a window, but again opened them and looked about when its face was turned from the light. If he were exposed to a moderate light he would open first one eye and then the other. If both were open he squinted with one, more frequently the left (convergent squint). On the sixth day he seemed annoyed by prolonged removal from the light, and would be quite still if a candle were lit and thus surrounding objects dimly seen. On the eighth day his sleep became interrupted by intervals of half an hour or an hour, during which he seemed to look steadily at objects with an air of consciousness. It seemed evident that his intellect was beginning to be developed, for his hands moved towards an object at which he was looking as if with a confused intention of touching it. Daylight still compelled him to shut his eyes. When a lighted candle was held at a distance of from six to nine feet he would look at it steadily; if the candle were brought nearer (at two feet or one and a half, or one foot) he squinted extremely, and, in spite of his wish to look at the flame, which pleased him, he was obliged after a while to close his eyes. There was photophobia therefore, inducing a squint in order to remove one eye from the light. On the twentieth day the baby could open its eyes better and look about by rolling the eyes without moving the head, but its look had neither expression nor precise intention. It always feared a full light and squinted strongly when exposed to it. It slept more in the daytime than at night, probably because of the susceptibility of the sight and the rapid fatigue which resulted even from a short exercise of the power of vision, forcing it to close its eyes and yield to the torpor due to the absence of all sensorial impression. He would remain awake for a long time at dawn, and in the twilight would stir himself, cry out, and look about him and stretch his hands out towards objects which he perceived. It was suspected that his range of vision was limited, and that he could not see with the peripheral portions of the retina, that is, that he could only see for a short distance and straight before him. As he already took some notice of the flame of a candle, an attempt was made to confirm the above suspicion. It was found that in a dimly lighted room he would look attentively at a candle held before him at a distance of from three to six feet, but if this were suddenly moved a yard in any direction he ceased to see it and looked vaguely in other directions. If he happened accidentally to look in the right direction he would then "fix" anew, or if the candle were brought back to its original position he saw it again. He lost sight of the candle in whatever direction it was moved, even though its position had been but slightly altered. Moreover, when the candle was moved to a distance of nine, twelve, or eighteen feet straight in front of him, the baby could not see it. If it were brought back to a distance of six or nine feet he again saw it. If the candle were brought nearer (eighteen inches or less) convergent strabismus, winking, and finally closure of the eyelids followed. It would appear that the state of the vision is in accordance with the state of cerebral development; that the infant has, from its birth, a very marked power of convergence, which is the principal agent in the production of permanent strabismus at the same time that the excessive sensitiveness of the retina is its primary cause. It is to be added, that, when this sensitiveness is continually excited by an abnormal condition of ocular refraction, hypermetropia (much more common in the young than myopia), the photophobic convergent strabismus, becomes very manifest and remains permanently.

On the twenty-eighth day after birth it was noted that the baby desired to be carried about whilst awake, and would remain awake for an hour or two, and would look about with some sort of curiosity, unless it was exposed to strong daylight or sunlight. It opened its eyes widely and did not blink. On the thirty-sixth day he was taken out of doors, and could bear the light. If, however, he looked at a light which was close to him, or even at any object closely, he still squinted. He did not recognize any one by sight, it did not matter to him who took him and carried him about, but he knew his mother's voice. It was not till the sixtieth day that it was certain that he recognized his mother by sight. He would look at her attentively and smile at her, but not at any one else, and he did not like strangers. It pleased him to see the large flowers on a curtain and to be carried about in a well-lighted passage. At the age of two and a half months he could not "fix" an object at twenty feet distance, and all attempts to attract his attention by a light held on one side were unavailing. If a noise were made on one side of him, he would attempt to turn his eyes and his head to that side. At the age of three and a half months it was evident that he had a larger field, and he would watch the movements of his brothers playing at a considerable distance.

At the age of four months it was still evident that his sight was not fully developed either in a direction straight before him or laterally.

One means, amongst others, adopted to test this was, to attract the child's attention while he was seated on his mother's arm, and get him to look at some one stationed behind his mother, the child looking on one side of his mother's head.

If then the person behind moved to the other side, the child lost sight of him, though the actual lateral movement was very slight. It was not till the age of five months that the field of vision seemed nearly normal. He now seemed to have sufficient muscular power to hold his head up and turn it wherever he wished. At six months it seemed quite evident that he could see widely and at a great distance.

There was no photophobia. Parents and nurses often say that squints have been caused by exposing babies in their cradles to too strong a light, but the permanent squint is generally not observed till the age of one or two years, and hypermetropia is generally present.—*Royal London Ophthalmic Hospital Reports*, July, 1872, from *Annales d'Oculistique*, Sept., Oct., 1871.

---

51. *Tinting or Tattooing Opacities of the Cornea.*—The unsightly appearance of leucomata, or incurable dense opacities of the cornea, is often a source of annoyance and mortification, especially to females. M. WECKER has practised a method of concealing these unsightly opacities, which has met with much favour and been successfully resorted to by various ophthalmic surgeons.

Dr. CHARLES BELL TAYLOR of Nottingham, in a communication read before the Surgical Section of the British Medical Association in August last (*British Medical Journal*, September 7th, 1872), states that the operation, "which, as a rule, causes very little pain or irritation, is best performed with a number of the finest needles firmly bound with the points on a level around a handle such as a penholder, or a large needle which has been grooved for the purpose by Messrs. Weiss may be substituted with advantage in certain cases. The substance which M. Wecker recommends for tinting is Indian ink; but I have also employed sepia, ultramarine, and other colours with advantage, and, when an immediate and deeply coloured effect has been desirable, a combination of lampblack with Indian ink, and a solution of nitrate of silver. The patient may either recline or be seated in a chair, and it is well to separate the iris with a speculum and steady the globe with a pair of ordinary forceps, taking a firm grasp of the conjunctiva. The needles are then dipped in one or other of the solutions in question, which should be made as thick as possible, and the superficial layers of the cicatrix are rapidly punctured in an oblique direction, and layers of the solution applied just as in ordinary tattooing, until the white speck is changed from a most apparent deformity into a black surface scarcely visible; a fresh layer of the substance is then applied over the tattooed cicatrix, the patient is directed to keep his eyes open, so as to let it dry on and remain as long as possible, and he may at once go about his usual avocations.

"It is important not to close the eye, and to prevent, as far as possible, the washing away of the pigment by the tears; this is best accomplished by enveloping the operator's fingers with a silk handkerchief, so as to mop up the secretion, and afterwards by the avoidance of winking on the part of the patient. M. Wecker is content with ten or fifteen punctures at a time, and requires from his patients four or five sittings. I have, however, usually completed the operation at once, and made any little addition that might appear necessary some weeks later; the slightest specks, such as are left after phlyctenular conjunctivitis and small ulcers of the cornea, are easily banished by one or two pricks of the needle; and when the whole eye has been opaque, very unsightly, and sight completely abolished, I have very advantageously substituted extirpation of the globe, or the superimposition of an artificial eye, by tattooing a round central pupil so as to restore to a remarkable and most charming degree the natural appearance of the globe. Not only is deformity removed by this slight operation, but patients generally tell us their sight is improved, a fact due, no doubt, to the circumstance that a black speck is much less dazzling than a white one.

"In cases of large cicatrices, I generally make an artificial pupil first, and tint the opacity afterwards; and, when this is carefully done, it is difficult to distinguish the black speck from the neighbouring artificial pupil. I have no doubt that this little operation will also be found of service in cases where considerable dazzling follows the removal of a portion of iris, either *per se*, or when the operation has constituted a part of the operation of extraction for cataract; as by tattooing the cornea an invisible opacity may be occasioned which will constitute a permanent shade, and shut out the light to any required extent; soft cicatrices are readily coloured, but old, hard, and incrusted ones are more difficult of treatment. In these cases, the nitrate of silver and lamp-black are of service; no doubt, also, lead, sulphur, charcoal, gunpowder, and other ingredients will come to be employed in time. In some cases, the coloration is not very permanent, but it may always be repeated; and, even if the perfect blackness do not remain, a grayish semitransparent coloration takes its place, which looks very like cornea, and it is infinitely preferable to the original deformity.

"It is well to commence the tattoo at the lowest surface to be operated on, in order that the operator's sight may not be obscured by an overflow of the liquid." Dr. Taylor concludes by quoting a case in which this addition to our armamentarium enabled him to render a real service to a young lady who was suffering not only from loss of sight, but also from a most embarrassing deformity.

Mr. C. S. TICEHURST, dresser to the eye department of Guy's Hospital states (*Lancet*, May 4, 1872), that this tinting operation has been performed many times in the hospital, and with the most satisfactory results. He thinks that the tattooing made with the ordinary needles looks better than when made with the grooved ones, and that M. Bader has tried them and approves of their use. "As to the depth to which one pricks in the corneal epithelium, it is only necessary just to enter it, and it requires more force to do so than might be imagined." There is little after-treatment required; no bandage is required; the eye may be bathed in water if uncomfortable, and the patient directed to use his eyes freely.

## MIDWIFERY AND GYNÆCOLOGY.

52. *Long Delay of Labour after Discharge of Liquor Amnii.*—Dr. MATTHEWS DUNCAN read a paper on this subject before the Obstetrical Society of London, June 5, 1872.

A patient was expecting her confinement in June, 1872. On the 10th of March there occurred during the night a copious flow of liquor amnii, and slight irregular pains were felt. The liquor continued to discharge freely, but not constantly. The uterus gradually diminished in bulk, and in a fortnight's time it felt not much bigger than a large adult fœtal head. On the 25th of April regular pains came on, and the child was born alive, but survived a very short time. There appeared no doubt that pregnancy continued for forty-five days after the discharge of some of the liquor amnii; and the fœtus continued to live for several weeks in a very contracted uterus. The author considered that the hypothesis resorted to by Burns in explanation of such cases, that the torn membranes may be healed, was not only without rational grounds, but contrary to all we know. Among the conditions which may be mistaken for premature evacuation of liquor amnii Dr. Matthews Duncan mentioned discharges of urine, watery discharges, such as are sometimes observed in virgins, and whose source may be Cowper's gland or the cervix uteri, discharges from the uterus of a fluid occupying the anatomical position of hydroperionic fluid, discharge of liquor chorii, discharge of the liquor amnii of one ovum, discharge of the fluid in a cyst described as occurring between the chorion and the amnion. In the above case, however, that the discharge was liquor amnii was proved by the subsidence of the uterine tumour, by the diminution of its bulk, by the increase of its hardness, by the complete absence of discharge of liquor amnii at the time of labour, by the compressed state of the child, and by the almost complete rubbing off of the vernix caseosa. Here the discharge of liquor amnii in occasional gushes took place till labour came on ; and long after it was evident that the uterus had been for the time as completely evacuated of this fluid as it could be. But this circumstance was easily explained by the accumulation of newly secreted liquor amnii. Winkler's researches proved that the amniotic membrane has the power of secretion and absorption in a high degree. The author believed that firm compression of the fœtus may take place without active uterine contraction ; and it is firm compression by active uterine contraction that is incompatible with continuance of pregnancy, or of fœtal life, not such mere firm compression as is seen in a case of missed miscarriage or missed labour. The explanation of the partial and repeated discharges of liquor amnii by a high position of the rent in the membranes, and some sort of valvular action, seemed to the author chimerical. The great question suggested was, why do conditions which generally induce labour fail to do so in these rare cases? In our present state of utter ignorance as to the cause of the coming on of natural labour, it is not to be wondered at that we cannot tell the cause of its failing to come on. It is highly probable that he who discovers the cause of the coming on of natural labour will also be able to explain why in these abnormal cases labour does not come on.

Dr. Snow Beck mentioned the case of a lady who, when six months pregnant, had a copious discharge of clear watery fluid. Labour came on at the natural term, and there was no escape of liquor amnii. Also another case, in which at the fourth or fifth month there was a sudden discharge of two or three quarts of perfectly clear fluid, which continued more or less all night. This recurred every evening (except during one week) for ten weeks, when she was prematurely confined, and died from hemorrhage two hours after the removal of the placenta. Dr. Beck believed this to be an exudation from the vagina, and perhaps the great venous congestion was relieved by rest during the night and again increased by being about all day. He did not think that either set of glands in the uterus was involved in its production.

Dr. Barnes believed that hydrorrhœa, especially in early pregnancy, resulted from a hypertrophied condition of the glands of the uterine mucous membrane, and this might explain Dr. Beck's second case. He did not believe in the rupture of the membranes and the rent healing. He might offer a speculation in relation to the cause of labour. Why labour did not so readily come on under provocation before the natural term of gestation was because the nervous centres had not yet attained that remarkable degree of irritability which characterized them at full time. There was a less ready response to excito-motory stimulus.

Dr. Rasch said he found the characteristic smell of the liquor amnii a very valuable help to diagnosis in cases of alleged discharge of the waters.—*Lancet*, June 29, 1872.

53. *Portion of Placenta thrown off in Pregnancy.*—Dr. Evory Kennedy related, in his address to the Section of Midwifery of the British Medical Association, at its recent meeting, the following remarkable case:—

A lady, in the seventh month of her fifth pregnancy, was seized with hemorrhage, ascribed to over-exertion. There were no labour-pains. On examination, a portion of the placenta was found protruding through the os uteri. The hemorrhage continued for several days, but to no serious extent ; and still there was no labour. At length, fetid grumous discharges, mixed with a little blood, occurred, attended with sense of downward pressure. The portion of placenta descended lower in the vagina ; its connection with the interior of the os separated ; and I removed it with very little assistance. As no increase of hemorrhage occurred from this, I thought it unnecessary to plug the vagina. The hemorrhage and discharge ceased, and the patient went on without any inconvenience, except the precaution of keeping the horizontal position for six weeks longer, when she was delivered of a living boy apparently at or near the full time. The edge of the placenta that remained could not be felt near the os, and the portion that came away consisted of the vascular structure without the reflected membranes. There was no discharge of liquor amnii until the labour set in.—*British Medical Journal*, August 10, 1872.

---

54. *On Version and Uterine Tetanus.*—Dr. ALEXANDER MILNE, in an interesting communication (*Lancet*, August 10, 1872), remarks:—

"The operation of podalic version, where the pelvis is of average size, the os uteri dilated, and the membranes entire, is one of easy performance; but, where the liquor amnii is absent or has long escaped, where the parts have become swollen and dry, and the uterus has contracted firmly around the fœtus, we have the conditions of difficulty and even of danger. The difficulty is greatly enhanced if the contraction of the uterus happens to be tonic or tetanic, a condition that not very rarely obtains. I have seen not a few such cases, and where the contained body was grasped so firmly that extrication appeared a hopeless task, the idea of version almost utopian, and extraction by craniotomy or spondylotomy the only hope—a sorrowful one indeed! This tetanus of the uterus I have observed occasionally to mark the entire organ; at other times, and oftener, it appeared to be partial, a common place for it being the internal os, less frequently the external os. Sometimes it consists of narrow bands in some part of the cervix, having all the rigidity of a ring of iron. Whether partial or general, it grasps the fœtus with immense power, and, uncombated, renders turning utterly impracticable. I ought also to remark that, though more common in the absence of the liquor amnii, it yet occasionally exists prior to the breaking of the membranes, and indeed is a cause of their premature rupture.

"Now, when we meet with a case of this kind, where the uterine contraction is continuous or tetanic, intense, extreme, and grasping the child as in a vice, what ought to be done? Chloroform, of course, must be administered, and very freely, too; and often it relaxes the spasm in a wonderful manner, but I have seen it fail frequently in uterine tetanus—nay, it usually fails in such cases. There was an impressive case, in illustration of this, reported to the Edinburgh Obstetrical Society, in November 1865, by Dr. Inglis, and where the late Sir James Simpson had to perform spondylotomy. "The patient," says Dr. Inglis, in his report, "had been kept deeply under the influence of chloroform for two hours, yet the uterus remained nearly as firmly moulded to the body of the fœtus as before." Chloroform then being inadequate to the relaxation of this spasm, have we any other means or appliances of a more powerful kind? We have, and they are tartarated antimony and lobelia inflata. When the chloroform is ineffectual, recourse should be had to these. Give a grain of the antimony, and twenty-five minims of the tincture of lobelia inflata; afterwards, on the lapse of twenty minutes, place the patient under the influence of chloroform. The triad form a potent antispasmodic whose conjoint action is almost irresistible, and the spasm is overcome. The uterus relaxed, the hand now finds entrance, and version becomes a possible thing. I am convinced that reducing instruments may often by these means be stayed.

"*Hand to be employed.*—Now, what hand ought we to employ in these extreme cases? This is a deeply important question, and one whose gravity we can scarcely overrate. A somewhat uncertain sound has been given forth on this question; some recommending one hand, some another, while others have ignored the thing altogether. The majority recommend the right hand, which (I say it advisedly) is the wrong one. (I must except Meigs, Lee, and Ramsbotham, who are orthodox on this matter, and have risen to the height and gravity of it.) The left hand, in the great run of cases, is the proper one to employ; and I hereby deliberately impeach the right one with many failures; with deplorable craniotomies and spondylotomies, not to speak of maternal injury. Almost any hand will succeed where it can float in abundant waters, and where there is a roomy pelvis; but in the more difficult cases, where space is scant and the parts are tumefied, commend me to the left one. It is the proper one in all dorso-anterior cases; and we shall succeed better with it even in dorso-posterior ones where there is fluid and space. The grounds for preferring the left hand I stated in *The Lancet*, October 15th, 1870, and have noticed them also in my work on Midwifery; I need not, therefore, take up space by reiterating them. I would only again repeat as forcibly as I can, Cultivate the left hand in version if you wish to avoid failure—nay, if you wish to conserve life. I have been baffled with the right hand; but I am happy and proud to say that I have *never* failed to turn with the left.

"*Shall we seize one leg or both?*—There is only another point in connection with this subject to which I would shortly refer, and that is in regard to the leg or legs to be grasped. In those difficult cases, to speak paradoxically, we can neither afford to seize both nor to want both—that is to say, there is little room to enable us to get hold of both, but it is better to have them if at all possible. The fœtus will then revolve more readily, and come down more speedily—nay, neither evolution nor descent may be accomplished if only one extremity be seized, as was seen in Case 6. Of course I allude to the extreme cases. More especially is it of importance to attend to this where the head is the presenting part. M. La Chapelle called attention prominently to this, and my experience of version warrants me in placing considerable emphasis upon it."

---

55. *Post-mortem Parturition.*—Dr. AVELING read before the Obstetrical Society of London (July 3d, 1872) a paper on this subject. He referred to forty-four cases of the kind, and from these deduced the following conclusions: 1. Expulsion of the contents of the uterus may take place after death without the aid of art. 2. This may occur in cases in which no symptoms of natural parturition can be discovered before death. 3. Many of the manœuvres and accidents which take place in labour during life may occur in post-mortem parturition, such as expulsion of the placenta, spontaneous evolution of the fœtus, and prolapsus, inversion, and rupture of the uterus. 4. Expulsion of the uterine contents and accidents which accompany labour may be caused after death either by the contracting power which persists in the uterus after the death of the rest of the body, or by the pressure exerted upon the uterus by gases of decomposition pent up in the abdomen. 5. Of these causes the latter is the more frequent. 6. After the death of its mother a child may continue to live in the uterus for many hours. 7. After the death of a woman undelivered, no time should be lost in removing the fœtus.

The President observed, that, if we called in rigor mortis to explain the post-mortem parturition, we must also remember that rigor mortis would also affect the rigidity of the passage. The question would then be, does the uterine rigor last longer than that of the passages?

Dr. Snow Beck said that some of the older cases of the kind should be accepted with some doubt as to their accuracy. Dr. Beck then described a case of partial expulsion of the child after the death of the mother, which he had himself noticed.

Dr. Madge said it was an important point how soon after the death of the mother one would be justified in opening the womb to save the child. In one case of convulsions Dr. Madge did this twenty minutes after death, but the child was dead. There were no signs of uterine action after the mother's death, and on removing the child the uterus remained in its uncontracted state.—*Lancet*, July 27, 1872.

---

56. *Report of Private Obstetrical Practice for Thirty-nine Years.*—Dr. FLEETWOOD CHURCHILL presented to the Dublin Obstetrical Society a summary of his private practice, based on facts entered in his case-books at the time when they came under observation. In the period from January, 1832, to December, 1870, inclusive, he had attended 2547 cases of labour, exclusive of abortions and premature births before the seventh month. The labours were most frequent in April, and least so in February. In 2540 cases there were 1290 male children, and 1250 female; and the deaths numbered 130, or one in 19.54. There were sixteen cases of twins, with eleven deaths; and one case of triplets. In forty-seven of the 2547 cases labour was protracted beyond twenty-four hours.

In seven cases the second stage exceeded ten hours in duration. No death occurred in instances either of prolonged second stage or of tedious labour. The third stage was five minutes in 1965, and an hour in only eight cases out of 2387. *Post-partum* hemorrhage occurred three times, and once ended in death. Dr. Churchill had never known hemorrhage to occur when firm grasping was applied to the uterus immediately after the child was born, causing it to contract rapidly and to expel the placenta into the vagina. The length of the funis varied from about fifteen to fifty-seven inches. In 2565 children the following *presentations* were met with: superior extremities, six times; breech, forty-nine times; foot or knee, eighteen times; face, four times; forehead towards pubis, twenty-one times; prolapse of funis, eight times; hand or arm with head, seven times; foot and hand, once in a putrid child; spontaneous evolution, once. Of *complex* labour there were, one case of convulsions; five cases of accidental hemorrhage (with two deaths among the children, and one among the mothers); two of unavoidable hemorrhage (two children lost); one case of *præ-partum* internal hemorrhage (child lost); one of *post-partum* hemorrhage (fatal to mother); one of rupture of uterus (fatal in twenty minutes), came under observation, besides a few cases of laceration of the perinæum, eight cases of prolapsed funis, and three of puerperal mania. As regarded *operations:* version was employed on seven occasions; the forceps cases numbered forty two, or one in sixty and a half, with three deaths; and craniotomy was performed seven times, the mothers recovering in four cases. The deaths, after the last-mentioned operation, were caused by convulsions (for which the operation was performed in the hope of saving the mother), by hemorrhage, and by phlegmasia dolens. In the 2547 cases the maternal deaths amounted to seventeen, of which puerperal fever caused eight. The paper concluded with an enumeration of the malformations met with among children.—*Brit. Med. Journal,* July 13, 1872.

57. *Vicarious Menstruation by Means of Epistaxis.*—Dr. OTTO OBERMEIER relates an instance of this occurring in a servant, aged 24. The first catamenia appeared at 15, and were very profuse. Epistaxis occurred the following month, and appeared regularly for several years, until she became pregnant in March, 1870, when it ceased, but again returned six weeks after parturition, and continued regularly for some months, although not so freely, when conception again took place. The epistaxis usually lasted three days, and was accompanied by malaise, feeling of giddiness, muscæ volitantes, etc.—*Brit. and For. Med.-Chir. Review,* July, 1872, from *Virchow's Archiv,* Bd. 54, 1872.

58. *The Administration of Ergot in Diseased States of the Heart.*—Dr. JAMES THOMPSON, in a communication to the Midwifery Section of the British Medical Association, related two cases in which it was deemed expedient, after consultation, to administer ergot freely. In both, the pressing symptoms, which pointed to ergot, were relieved; but, immediately after delivery in one, the heart seemed to lose power, the pulse faded away, and, notwithstanding powerful restoratives, the patient died in three hours. No *post-mortem* examination was permitted; but there was a history of previous syncope at repeated intervals. The other case was one of miscarriage at an early date, and ergot was given to check the flooding; but after a few doses the cardiac action became so much impeded that the ergot was withdrawn. Dr. Thompson expressed his opinion that in these cases the ergot acted with paralyzing force on the maternal circulation, already weakened. The cases seemed to be warnings to administer ergot with great care in persons of feeble cardiac power.

Drs. Henry Bennett and Simpson thought that the evidence was incomplete that the ergot induced the collapse.—*Brit. Med. Journ.,* August 24, 1872.

59. *Diagnosis of Incipient Cancer of the Neck of the Uterus*—Prof. SPIEGELBERG states, in the *Arch. f. Gynæc.,* vol. iii., part 2, that in the incipient stage a distinction between cancer and simple induration of submucous cellular tissue can easily be made in the following manner. The mucous membrane, in cancer,

will be found firmly glued and immovable, which is not the case in hyperplastic thickening and induration, and when the sponge-tent is introduced, the latter thickening will become looser, softer, and thinner, whilst in cancer the neck remains hard and unyielding.—*The Lancet*, July 20, 1872.

---

60. *Subcutaneous Injection of Ergot in Fibroma of the Uterus.*—In an interesting communication to the *Berliner Klin. Wochenschrift* (No. 25), Prof. Hildebrandt, of Königsberg, draws attention to the utility of "subcutaneous injections of ext. secal. cornut. in fibroid affections of the uterus." His attention was first drawn to the subject in 1870 by the case of a Polish woman, 33 years of age. This he narrates with considerable details, for which we have not space. Suffice it to say that she was the subject of a large fibroma of the uterus, of the diagnosis of which there could be no doubt; and that this, of three or four years' standing, yielded to none of the usual remedies which were successively tried. It was therefore determined to have recourse to ergotine injections, with the view especially of moderating the profuse hemorrhages, and perhaps of forcing the tumour to within an accessible distance of the os uteri. They were thrown into the cellular tissue of the walls of the abdomen covering the tumour daily during a fortnight. They were suspended during menstruation, and after this (which was less painful and profuse) had ceased the patient stated that the tumour had diminished. On measuring it this was found to be the case, and the daily use of the ergot was resumed. From week to week the tumour was found to lessen, until, fifteen weeks altogether having been passed in the treatment, all vestige of it had disappeared.

Such success in a case which had been regarded as incurable naturally led to other trials of this means, and Professor Hildebrandt refers to eight cases, concerning the exactitude of the diagnosis in which he has no doubt whatever. With the exception of two of these cases (in one of which ergot intoxication occurred, and in the other great pain was produced by the injection), they all underwent improvement, both as regards diminution in the size of the tumour and in the accompanying menorrhagia and pain. Dr. Hildebrandt observes, that, if fibroma or myoma of the uterus is not usually an affection immediately dangerous to life, yet it always entails great suffering upon its subjects, and very often, by the profuse menorrhagia to which it gives rise, induces the extremest anæmia, which not infrequently proves fatal. We must not deceive ourselves with respect to the curative effects which the waters of Kreuznach and Franzenbad, etc., are supposed to exert on uterine fibroids, for, according to the author's experience, such effects are exerted on the accompanying exudation, rather than on the fibroid itself, which at most undergoes only some diminution. Operations, too, in these cases are also very rarely possible, and are always attended with very great danger. We may therefore hail this new means of treatment, as exhibited in these examples, as not only a very efficacious but also as a simple procedure, devoid of danger. A tumour of large circumference, reaching above the navel, totally disappeared, and another, reaching the edge of the ribs and distending the abdomen, became greatly diminished. The diminution of the tumors which took place in four other cases renders it highly probable that complete success would here have been attained also, had not the patients from various causes ceased pursuing a mode of treatment which consumes much time. Of equal importance is the complete disappearance of the profuse hemorrhages, the debilitating serous discharges, and the severe pains.

These observations do not enable us to speak with any certainty as to the *modus operandi* of the ergot. Probaby in part from the contraction of the nutrient vessels of the tumour, and in part from its general compression under the contractile action of the walls of the uterus, the nutrition of the tumour becomes defective, and its degeneration and absorption ensue. The author suspects that intra-uterine tumours will be found more amenable to this action of ergot than sub-peritoneal, and myoma more so than fibroma. With reference to the mode of employing the ergotin, the following points require attention: 1. The solution, which is thrown in by means of a Pravaz syringe, is composed of three parts of watery extract of secale cornutum to seven parts of distilled water and seven parts of glycerine, this causing much less pain than Langenbeck's alcoholic solution, and not giving rise to any suppuration. It may cause little, somewhat tender indurations, which are long in disappearing; but so little pain is caused by the procedure that the patient is able to return home immediately after the injection has been made. 2. The lower portion of the abdomen is very much more sensitive to the injection than the parts near the navel. 3. At the time of menstruation, as well as shortly before and for a few days after it, slight hemorrhage follows the punctures. 4. After from ten to fifteen daily injections have been practised, the solution flows out again from the orifices. It is therefore necessary at this time, as well as during menstruation, to apply a piece of wadding, wetted with collodion, immediately after the injection has been made.—*Med. Times and Gazette*, July 27, 1872.

---

61. *Gastrotomy in Cases of Fibrous and Fibro-cystic Tumours of the Uterus and Spontaneous Absorption of a Uterine Fibroid.*—M. PÉAN contributes (*Gaz. des Hôp.*, Nov. and Dec. 1871) some cases of great interest in which gastrotomy was performed. He considers the operation to be only justifiable—

*a.* When serious symptoms are produced on account of the great size of the tumour and its pressure on the surrounding parts.

*b.* When there is profuse metrorrhagia imperilling the life of the patient.

*c.* When the presence of the tumour causes intolerable pain either in the abdomen or inferior extremities, thereby entirely destroying the patient's comfort in life.

In suitable cases he believes the difficulties and dangers not to be greater than in ovariotomy. In two of the three cases in which M. Péan operated successfully there were large intra-uterine fibroids, the removal of which necessitated the removal also of the greater portion of the uterus, both ovaries, and the Fallopian tubes. The third tumour was found to have only slight uterine attachments, and the organ was therefore left untouched. In the two cases of uterine fibroid the abdominal incision reached from the pubes to above the umbilicus, and was found to be sufficiently large to allow the bulk of the tumour to be extracted through it. The bulk of the tumours was excised after their base, which formed a narrowish neck, had been transfixed by a double metallic ligature, which was firmly held on either side. The third was an enormous fibroid, apparently originating in the right broad ligament, but filling the whole abdominal cavity, and being extensively adherent to the surrounding structures in every direction, but so complicated were these adhesions that the operation lasted upwards of three hours. The patient, however, made a perfect recovery.

M. Péan has also operated on two cases of fibro-cystic uterine tumour. One of these has been previously published; the second was operated on during the siege of Paris, and under the most unfavourable conditions. The whole uterus was removed. The patient, however, made an excellent recovery.

M. Péan incidentally relates the particulars of a case of spontaneous absorption of a uterine fibroid. The tumour was of enormous size, and filled nearly the *whole abdominal cavity.* Five years ago M. Péan saw the lady in company with other medical men, and the nature of the tumour was carefully ascertained. Last June he again saw her, and found that the tumour had entirely disappeared.

M. GUENOT maintains (*Union Méd.*, March, 1872) that the frequent examples now recorded prove that spontaneous absorption of fibroid tumours of the uterus does occur. The tumours, he says, seem to disappear by a process of fatty degeneration of their structure. Remedies known to favour fatty changes, such as arsenic, phosphoric acid, etc., are therefore indicated.—*Brit. and For. Med.-Chir. Review*, July, 1872.

## HYGIENE.

62. *Hospital Atmosphere.*—Dr. Evory Kennedy, in his address to the Midwifery Section of the British Association, made the following remarks:—

"I hold that the congregation of a number of patients in common chambers generates what we term a hospital atmosphere; that this hospital atmosphere is, or more properly becomes, a poison; that, by a persistence in the causes of its production (with which we shall presently deal), it undergoes a process of what may be termed cumulation, pervading every part of an inclosed building, until it eventually arrives at a stage which we may term saturation, when the whole hospital is charged with a poison capable of seizing upon those who are susceptible to its influence, or who are in what we term a state of receptivity.

"Now, from this it will be seen that, by crowding patients in a hospital, we are actually exposing them to a new disease generated by the very means we adopt to cure them of the disease under which they chance to labour. But, unfortunately, the new disease is generally one most fatal in its character, as few there be who survive it.

"The characters or phases of the hospital disease vary under different circumstances of the victims susceptible to it. Thus one may be attacked with blood-poisoning or empyema; another with erysipelas; a third with hospital gangrene; and a fourth with metria or puerperal fever. The laws which regulate the habits of this family of zymotic disease are perhaps best arrived at by a study of the last named poison, as, in its occurrence in our great lying-in hospitals, where it principally commits its ravages, it is less exposed to disturbing influences, and consequently pursues its own natural course free from interruptions and complications.

"Out of a hundred and eleven years, for which the great Dublin Lying-in Hospital has been established, it has been haunted by puerperal fever ninety-three years. For twelve years it has been comparatively, and only for eight years has it been totally, free from this fell disease. The deaths of those admitted for the last years amount to 1 in 33. Let us remember that in three small cottage hospitals in Ireland, in which accurate tables have been kept (Killkenny, Newry, and Waterford), we find that the mortality has been 1 in 282. On the comparison of these two proportions, the conclusion is inevitable that eight out of nine patients have died in the Dublin Lying-in Hospital who would not, in all likelihood, if they had taken refuge in the cottage hospitals, which were comparatively free from the hospital miasm or poison that prevailed or lurked in the great unhealthy hospital.

"A fatal error, into which we are prone to fall, is the confounding epidemic and endemic disease; and the amount of loss of life that has occurred from this error I believe to be incalculable. This will be easily appreciated when we state that what, in strictness, we should call true epidemic diseases, are unavoidable; whilst the latter, or endemic diseases, are, with rare exceptions, preventable and perfectly within our control. True, they may be convertible; but this makes the distinction the more important, in order to prevent their extension or fixture.

"The contagious nature of hospital miasm is now beyond question; as also that of most of those modifications of hospital zymotocene with which we are familiar, especially metria and erysipelas.

"Having satisfied ourselves that a poison is generated by the mere crowding of numbers of patients into a common atmosphere, and also that this poison spreads by contagion, the next principle or law we require to establish is that this poison is cumulative, or developing in its quantity, commencing with a single poisonous emanation, and increasing in its quantity until the atmosphere, walls, floors, and furniture become imbued or charged with it. Unfortunately, as yet we are unable to detect this miasm or poison and display it by its sentient properties; but of its existence we cannot have the slightest doubt, from its effects, from its laws, from analogy, and especially the spread of diseases by inoculation and contact.

"But why should the hospital wards ever be free from hospital miasm and these fatal results, if all this be true? This is a question to be answered by the law upon which we now dwell—cumulation. The ordinary epidemic disappears; having, as we say, worn itself out. This it does in hospital as out of it. Precautions are taken; patients zymotically affected are separated; ablution and ventilation are carried out; admissions are refused; the wards are emptied; and the hospital becomes healthy. Weeks, months, and longer, pass over before the poison again shows itself. The cumulative process, however, is in steady operation; and at an uncertain period the poison again shows itself, and snatches up its victims. The same measures of precaution are taken to banish it, and with the same results. But it does not rest here, as has been abundantly proved by the history of our great hospitals. When the cumulation has gone on repeating itself again and again, a further stage, or that which I shall denominate the stage of complete saturation, is arrived at, and then the hospital becomes the fixed *habitat* of the poison.

"The death of the consumptive costermonger is not to be placed in the category of the victims to hospitalism. It has its analogue in the dog slain in the Grotto del Cane for the instruction of his slayers, by holding him so close to the surface of the deadly cavern that he can only inhale mephitic gas. Nor, indeed, is it only in St. Pancras that we have this going on. Have we not our No. 11 wards and grottoes in nightly operation for the benefit of the upper ten thousand in the West-end *réunions*. Witness the pallid and poisoned state to which our belles are reduced, at the end of the season, from breathing mephitic and animal-poisoned air for several hours nightly, with their lungs at nearly as great a disadvantage as the costermonger's, by tight lacing and waltzing. The Black Hole of Calcutta and the middle passage rendered our fathers familiar with the more immediate effects produced from a number of people breathing and rebreathing the same atmosphere; and its more gradual effect in the production of jail-fever, grappled with by Howard in his mission of mercy, has reached us as a matter of history. We were in hopes that the labours of Boswell Reid and Arnott had exposed the defects of ventilation and directed a remedy. But the enormities occasionally cropping up from neglect in this respect show that much remains to be done. Dr. Farr, in a paper lately read at the Leeds Conference, pointed out the want that exists of an authoritative organization charged with the ministry of public health. As it is, what is every man's business is left undone. When will our legislators waken up from their piecemeal attempts at sanitary improvement, and grapple with this great subject as it demands, and as the well-being of the community requires?

"The fact is that, when the poison is generated, crowding or the co-habitation of patients in a state of receptivity secures its spread. A process of cumulation of the contagium or poisonous element occurs; and when this arrives at the stage of saturation, outbursts of erysipelas, phagedæna, gangrene, pyæmia, and metria occur; the patients are attacked wholesale; and the diseases become, as we before stated, endemic or fixed, and continue to haunt the hospitals, be they surgical or obstetrical.

"Now that the blot has been hit, it requires no great philosophy to meet the difficulty. Simply cease to crowd such patients into common buildings under the same roof. All the advantages of an asylum can be afforded whilst segregation is secured, and facilities for medical instruction preserved to the schools. The substitution of cottage-hospitals for these great hotbeds of contagion should be insisted upon in all future arrangements for housing cases liable to endemic poisons. The term epidemic should be applied in its true meaning. These large surgical and maternity hospitals, in which metria, erysipelas, and pyæmia have committed such havoc, should be either applied to purposes compatible with the safety to human life, or so altered in their construction as to isolate each ward from the common atmosphere now pervading the whole hospital. This may be very simply and inexpensively accomplished by opening separate entrances into each ward direct from the open air. In the existing hospitals, the communications with the common hall should be built up, and the same system carried out in the upper stories by opening the ward-doors on flying galleries. The lifts and stairs should be placed outside the building; the existing halls and passages being still retained for the staff, and affording an approach to the respective stories, but no covered approach or communication of any kind allowed to remain between these and the wards. By these simple expedients, and the limiting the number of beds to three in each ward, it is probable a large saving of human life would result, and hospitalism become, like jail-fever and smallpox, a thing of the past. Pity the founders of the great hospitals so recently erected had not applied our dear-bought experience in their magnificent constructions. The sooner these altered arrangements are made in such great palatial institutions as St Thomas's and the Leeds hospitals, as well as the maternities and our other great charities subject to erysipelas, pyæmia, and phagedæna, the sooner will the insidious approaches and fell ravages of our common enemy, hospitalism, be subdued.

"Stow, in his *Survey*, mentions, in speaking of the King's Bench Prison, that the great mortality that occurred there in the six years preceding 1579 was produced through a certain contagion called "The Sickness of the House." Those learned physicians who uphold the crowding in large hospitals, and imagine they can meet the difficulty by disinfectants, I would refer to the simple experience of that benefactor of our species, John Howard, as conveyed in his preface a century since. He says: 'I guarded myself by smelling to vinegar while I was in those places. This I did constantly and carefully when I began; but, by degrees, I became less attentive to these precautions, and have long since entirely omitted them.' John Howard discovered and carried out the best means, on true scientific principles, of disposing, once and for ever, of 'the sickness of the house.' If the obstinate hospital crowders would take example by him, and meet as he did, crowding, the cause of 'the diseases of the house,' and, as he did, remove them, they would speedily produce an equally satisfactory result, and, like Howard, give up their futile attempt to meet the case of dealing with emergency by 'smelling to vinegar.'"—*Brit. Med. Journ.*, August 10, 1872.

## MEDICAL JURISPRUDENCE AND TOXICOLOGY.

63. *Carbon as an Antidote to Phosphorus.*—MM. Eulenberg and Vohl have recently shown that phosphorus may be absorbed by charcoal. They, therefore, propose to employ the latter coal as an antidote to the former. They recommend that animal charcoal be given, with this view, in pills, because in that form, charcoal requires less fluid in order to be swallowed, and further because animal charcoal made into a pilular mass with mucilage or gum tragacanth is preserved many years. Experiments made upon animals have resulted very favourably.—*Revue de Thérapeutique, Med. Chir.*, April 15, 1872.

64. *Is Strychnia the Antidote to Chloral?*—M. Oré, Professor of Physiology at the Bordeaux School of Medicine, answers in the negative, or at least he denies that Liebreich had the right to state that strychnia was the antidote to chloral, as an inference from the experiments which he (Liebreich) had performed. M. Oré has been going over Liebreich's experiments, and has not attained the same results. It will be remembered that Liebreich's experiments went to show: 1. An hypodermic injection of two grammes (half a drachm) is deadly to rabbits. 2. An injection of one milligramme and a half of strychnia is equally deadly. 3. If an hypodermic injection of one milligramme and a half of strychnia be made into a rabbit, even when the effects produced by a subcutaneous injection of two grammes of chloral have begun to show themselves, these effects are rapidly arrested and the animal is restored to life. On the other hand, it dies if no strychnia is administered.

M. Oré's counter-experiments, eight in number, have been conducted on rabbits of various sizes. The results are: If two grammes of chloral occasion death in certain cases they do not in all; and the same may be said of one and a half milligrammes of strychnia. M. Oré concludes that strychnia may be the antidote to chloral, but that the fact has not been demonstrated by Liebreich in his experiments.—*The Lancet*, July 20, 1872.

65. *Death from the use of Chloral Hydrat.*—A case is related in the *Wiener Med. Wochenschr.* (No. 48, 1871), by Dr. MASCHKA, of an individual affected with palpitation of the heart and shortness of breathing, to whom was given as an anæsthetic, 4 gm. chloral hydrat, dissolved in 90.0 gm. of water. After taking this, the patient drank some punch. Immediately anæsthesia was produced, and two teeth were extracted without the patient being sensible of the operation. Directly afterwards the face of the patient became first flushed, then pallid, breathing ceased, and within a few minutes death ensued. Three days afterwards an autopsy was made, showing a loaded state of the bloodvessels of the integuments of the cranium, and of the brain and its membranes. The lungs were condensed, and in part beset with tubercles; the parietes of the left auricle and ventricle of the heart were atrophied; the tricuspid valves were hardened and unyielding; between the membranes of the brain, in the left pleural cavity, and in the pericardium, there was a considerable amount of serous effusion. Death in this case was caused, evidently, by what, in ordinary cases, was an unexceptional dose of chloral hydrat, acting upon a system already prone to narcotism, from disease of lungs and heart. The important lesson inculcated by the above case is the necessity of extreme caution in the administration of chloral hydrat under similar circumstances.—*Centralblatt f. d. Medicinisch. Wissenschaften*, March 16, 1872. D. F. C.

66. *Poisoning from Morphia.*—Dr. MODEL relates, in a number of the *Bair-Aertz. Intell. Bl.* for 1871, the following case. A young female, predisposed to attacks of mania, took unintentionally, within a short period, 18 c. g. m. of acetate of morphia, and was thrown into a state of extreme agitation. When seen, some hours subsequently, by the physician, there was perfect unconsciousness, with extreme tension of the muscles, coolness of the entire body, pupils immovably contracted, extreme feebleness of the heart's action, with weak and intermittent respiration. One hundred gm. of a solution of tannin were injected into the stomach of the patient, and to her body was imparted a rolling motion, with a view to bring the solution in contact with every part of the lining membrane of the stomach. Subsequently coffee and wine were injected. At the same time, the surface of the body was subjected to the action of various irritants, adapted to rouse into action the second branch of the trigeminus nerve, and thus by reflex action to reinstate the respiratory movements. One of the most powerful was found to be the forcible besprinkling of the face with ice-water. The above efforts were persevered in for two and a half hours, during which there took place frequent alternations of apparent recovery, followed by a relapse into the previous condition of paralysis. Finally, complete recovery ensued. The patient, on the days which immediately followed, was tolerably tranquil. Dr. M., in cases like the foregoing, where medical aid is invoked so long after the poison has been taken, prefers the solution of tannin to trusting the patient's safety alone to the unaided, doubtful, antidotal power of belladonna.—*Centralblatt f. d. Medicinisch. Wissenschaften*, No. 17, 1872.

D. F. C.

# AMERICAN INTELLIGENCE.

## ORIGINAL COMMUNICATIONS.

*Removal of entire Scalp; Wound healed by Skin Grafting.* By S. C. Bartlett, M.D., of Waterbury, Connecticut.

March 29, 1871, Miss M. T., of Naugatuck, Ct., aged 19, had her hair caught by a revolving shaft, which instantly removed the entire scalp from the occiput to the supercilii, including temporal regions, eyebrow, and left external ear.

When suppuration was established, I commenced skin grafting, as introduced by M. Reverdin, taking skin from the patient, until the excessive discharge from these additional wounds made it necessary to forego the operation. Many of Miss T.'s friends volunteered to furnish material rather than have the healing delayed.

In this way I obtained sixty-four pieces of skin, these being subdivided, until one hundred and fifty were applied to the head.

Five months after the accident, the wound being nearly two-thirds covered with new growth, the patient was affected with erysipelas, which destroyed all the growth from the margin, and most of the transplanted growth, a few of the large pieces remaining uninjured.

After four months' time, required to bring the wound again into healthy condition, skin grafting was resumed, and continued without interruption, until complete covering of the wound was accomplished.

The unusually large surface to be healed afforded fine opportunity to illustrate the virtues of skin grafting, the principal being the rapidity with which surfaces may be covered with a firm growth resembling ordinary cicatrization.

The application of large circular pieces of skin should be commenced as soon as possible.

These should be but little separated from each other, and near the margin, to prevent contraction. In this case there has been breaking away at the junction, the sound skin retreating, and engrafted portion extending to fill the space. The pieces have a firm growth until about three times the size planted. Beyond this limit they have less vitality, and easily break away, as is noticed in extended marginal healing of large wounds.

*Diplopia following the Administration of the Hydrate of Chloral.* By Wm. R. Manderille, M.D., A. A. Surgeon, Post Hospital, U. S. A., Aberdeen, Mississippi.

In the No. of this Journal for January last is reported a case in which the hydrate of chloral caused double vision, and I report the following case, which is similar in some respects:—

A gentleman was suffering great pain from a carious dens sapientiæ, and for the relief of which he took thirty grains of chloral, which affected him but slightly. In half an hour later he took another similar dose, which relieved the violence of the pain for about two hours, when he took a third dose, which soon put him in a deep and heavy sleep. The next morning he had the tooth extracted. Throughout the day he had an intense desire to sleep, which he tried to resist for some time, but at last had to succumb, only being aroused to take his meals, which he ate with much relish, not feeling the least nausea or heaviness about the head. The next day he also slept a good deal, and his eyes became watery, eyelids red, and somewhat swollen, and the conjunctiva very much injected.

He complained of seeing everything double, and of specks continually floating before his eyes—muscæ volitantes—which annoyed him so much, that at times he could scarcely see. This condition of his eyes lasted three days, but left them weak and watery for twelve days after.

ABERDEEN, August 13, 1872.

---

*Puerperal Convulsions successfully treated by Chloroform in Small Doses.* By J. O. SANDERS, M.D., of Carrollton, Mississippi.

I was called, January 16, 1872, to Mrs. K., a German woman, aged 17, in labour at full term with her first child. She had small limbs, and rather narrow pelvis; was neither anæmic nor plethoric. The family spoke so little English that I could learn nothing of previous history of case, and can only describe it as it presented itself at the time. The pains came on at 8 or 9 o'clock P.M., with violent convulsions, which continued until delivery, nearly twenty-four hours afterwards. I first saw the case some five or six hours after labour had commenced. She had then had three or four very violent convulsions, biting her tongue, and foaming at the mouth, being from the first perfectly unconscious. Soon after my arrival, I made an examination per vaginam, and found the os uteri dilated to the size of a silver quarter dollar, quite rigid, and not at all dilatable. The uterus was in a state of rigid contraction, and remained so during almost the entire labour. For an hour after my arrival there having been no convulsion, I began to entertain the hope that they had ceased and left her for a short time, but was hastily recalled by the cries of her attendants, who stated that she was dying. Hastening to her bedside, I found the spasm passing off. After that I remained closely by the patient, and found that the spasms recurred pretty regularly at intervals of perhaps an hour, or synchronous with the pains.

Now the fact that I particularly wish to direct attention to in this case was the controlling effects of chloroform upon those spasms, administered in the smallest quantities.

The patient was a labouring woman, neither plethoric nor anæmic, rather poorly developed, small limbs, and rather narrow pelvis, the latter not measured, but evidently less than medium. My manner of administering the anæsthetic in this case was to watch closely for the first symptoms of spasm, the slightest rigidity or contraction of any of the muscles, the turning of the eyes to one side, which I always found to precede the spasm, and with not exceeding twenty or thirty drops of the potent drug I did not fail in a single instance to control almost entirely the violent muscular contractions which were so plainly marked in the beginning; and, to prove that the spasms were not of themselves getting lighter, whenever I chanced to be out of the room, or relaxed my diligence, they greatly increased in intensity and duration. In the course of eighteen hours I administered less than two ounces of chloroform, and the effects were truly magical. The woman was wholly unconscious during the entire time of labour, and knew nothing of the birth of her child until several hours afterwards. She fell into a tranquil sleep as soon as labour was over, and had but two or three slight spasms afterwards, which were easily controlled by a few drops of chloroform.

The child was in a very precarious condition when born, but is now six months old, and reported to be a fine healthy boy. The mother recovered without an unpleasant symptom, and is at present date alive and well.

From my experience in such cases, I would put my faith in chloroform, and regard venesection, except in some cases of great plethora, as worse than useless.

---

*A Pin retained in the Throat fourteen months.* By A. Ady, M.D., of West Liberty, Iowa.

I was called to J. W., May 11, 1872, who stated that fourteen months previous he had got a pin in his throat. It was attended with considerable pain, and loss of voice. After an interval of some two weeks, efforts were made by an intelligent surgeon to remove it, but it could not be found. His voice gradually returned, so that in three months he could talk distinctly. The pain and soreness abated somewhat, but were never entirely absent. About three days before I called, his throat commenced troubling him more than usual. He experienced a feeling as though the pin was loose in his throat, and by the time I saw him, he was suffering acutely. Passing my finger down his throat, I felt the point of the pin extending forwards from the lower part of the posterior wall of the pharynx. It projected upwards at an angle of about thirty degrees, the point resting against the arytenoid cartilages. The head was firmly imbedded in the pharyngeal wall. I made several attempts to remove it with a pair of common œsophagus forceps, but they would not hold tight enough. I then took a small pair of polypus forceps, and slipping them down over the blades of the outer forceps, as near the pin as possible, I succeeded in grasping it tight, and pulled it out. The pin was found to be 1⅝ inch in length. For the space of an inch from the point it was corroded; the rest, including the head, was bright, showing how much had been imbedded in the tissues. The pin must have left the pharynx, and travelled through the neck to some extent. It was evidently not in the pharynx or the œsophagus when its removal was first attempted, for the sponge probang was passed the whole length of the œsophagus without encountering anything. Sticking into the throat point foremost, would indicate that it had made a circuit great enough to reverse ends. Patient complained for some months, during the time that it was retained, of severe pain along the course of the omohyoid, which would look as though the pin had been in contact with the descendens noni nerve.

---

*Case of Abnormal Structure of the Female Genital Organs.* By T. R. Brown, M.D., of Baltimore, Maryland.

I was called some three months ago to a lady, nineteen years of age, the history of whose case would not be pertinent to the subject matter of this article, which is to describe some anomalies observed on post-mortem examination. I will simply state that, four days previous to the patient's death, she had quite a profuse bleeding at the nose, lasting about forty-eight hours, and concluding with a sort of nasal catarrh, which, taken with the facts that she had never menstruated, and that the nose-bleedings were frequent in their recurrence, induced an examination, post-mortem, of the internal and external organs of generation—in which examination I was assisted by Dr. Cockery.

The vulva was natural in formation and appearance, with the mons veneris and external surface of labia majora well covered with hair; no clitoris could be perceived. The vagina, which was a simple cul-de-sac, about two inches long, was dissected out without encountering the crura clitoridis. It was destitute of rugæ, hymen, carunculæ myrtiformes, and had no communication with the "os uteri." The bladder and rectum were firmly adherent to each other, instead of being separated by an uterus, for which we hunted in vain. The bond of adhesion between bladder and rectum was the broad ligament, occupying its usual position, of a crescent shape, and imbedded in either horn of this crescent, near the summit, about one and a half inch internal to and on a line with the iliac fossa, was a nodular body, dense in structure, of the size of an apricot kernel, to which were attached a perfect ovary, Fallopian tube, and round ligament. The parts adjacent to the ovaries were greatly congested, evidently connected with a recent ovulation; and an incision into one of the ovaries showed several corpora lutea, with their corresponding cicatrices, on the outer surface.

I am of opinion that the nodular bodies referred to were what would correspond to the superior cornua of the uterus, and the non-striated muscular fibre, found by Dr. Tiffany in a small section, confirms my impression of its being uterine tissue.

The mammæ were unusually well developed, and the symmetry of the patient's figure well illustrated the vigour of her previous health, and her powers of endurance in sickness.

Among the many interesting points in this case, I will refer, in brief, to two or three:—

1st. The anatomical fact, well borne out by this anomaly, to wit, that the uterus and vagina are formed by the coalescence of the ducts of Muller, as well as the Fallopian tubes, and the absence of the uterus, as in this case, necessitates the absence of the perfectly formed vagina.

2d. I ascertained after the patient's death, that, notwithstanding there was neither vagina nor clitoris, she had had sexual desires, which, circumstances seem to show, had been gratified.

The third point of interest was the vicarious menstruation by epistaxis, tending to prove that this monthly discharge is necessary to the maintenance of health, irrespective of its point of exit, and is associated, with perhaps very few exceptions, with ovulation.

## DOMESTIC SUMMARY.

*Cerebro-Spinal Meningitis.*—Dr. Moreau Morris made some remarks before the New York Academy of Medicine on the existing epidemic of this disease in New York. "The various symptoms noticed," he stated, are "chilliness, acute pain in spine and limbs, clonic and tonic spasms, opisthotonos, and sometimes distortion of vision. There is often hyperæsthesia of skin. Rose-coloured spots, not disappearing on pressure, are noticeable in this disease; these pass away on the third or fourth day. Herpetic eruptions have been noticed. Epidemic meningitis is non-contagious, and the idea of specific contagion will have to be abandoned. Clinical experience and knowledge of hygienic laws prove that this disease is caused by miasmatic poison. Congestion of bloodvessels, with exudations of fibrin and pus under the meninges of the brain, are prominent lesions.

"The first cases of this disease were reported by gentlemen in this city on the sixth of January; and the extraordinary filthiness of the city has caused much anxiety in medical circles since that date.

"Whole number of cases reported to the Health Department to date is 412; deaths, 216. These cases occurred in 360 houses. Five cases occurred in children between 1 and 3 years of age; 125 between 1 and 5 years; 106 between 5 and 10 years; 66 between 10 and 20 years; 29 between 20 and 30 years; 17 between 30 and 40 years; and 20 over 40 years of age.

"The drainage was faulty in all the dwellings where cases occurred; and they were ascribed to faulty drainage in the majority of cases. In sections of the city where tenement-houses predominate, with dense populations, especially on the eastern side of the town, there cerebro-spinal meningitis has particularly abounded. These houses have wash-basins without water-traps and overflow pipes; the cesspools having no connection with the sewers. Cases have broken out as well in brown-stone houses, in fashionable localities, with all the Croton water conveniences; in fact, some of these houses have given the Health Board much trouble on account of the imperfect connection with the sewers, etc."

Dr. Alonzo Clark remarked, that Dr. Morris had pretty well exhausted the subject, with the exception of the treatment. He had seen cases where the spinal symptoms were not developed, only the cerebral. In one case of true spinal meningitis the patient remained for two weeks in a state of opisthotonos, and finally recovered. Severe pains in the limbs remained for some time. In other cases the chief pain was in the head, the pain in the limbs subsiding. He remembered one fatal case where pneumonia set in after the brain-symptom had subsided.

In none of the cases in hospital was there any ecchymotic eruption, but a papillary or herpetic variety was noticed, with a depression in the centre resembling smallpox. The ecchymotic eruption which first attracted attention was not seen in these cases.

In regard to the treatment, if there was no congestion, he ordered leeches to the spine and a vapour bath; but, on account of the restlessness of patients, that mode of treatment could not be carried out in hospital. Now the early use of opium is advocated, and is useful. Bromide of potassium is of decided service, but not in connection with opium. At a temperature of 103°, the application of the wet pack is of decided benefit in reducing the temperature. Beyond this we had scarcely advanced.

Dr. Morris's figures gave a mortality of over one-half. One death in four, or possibly one in three, is what Prof. Clark has seen in hospital practice. He said that at an early stage it would be advisable to take blood.—*Medical Record*, June 15, 1872.

---

*Veratrum Viride as a Hæmostatic.*—Dr. J. W. Collins calls attention (*Am. Practitioner*, Sept. 1872) to the veratrum viride as a very powerful and very reliable agent for the arrest of hemorrhage, both active and passive. "It should be given," he says, "in doses of from three to fifteen drops, repeated every one, two, or three hours, according to the urgency of the case, always carefully watching its effects."

Dr. C. has used it with benefit, he states, in hæmoptysis, in aneurism, to lower the action of the heart, and thus favour coagulation in the sac, epistaxis, menorrhagia, secondary hemorrhage after amputation of cervix uteri, in hemorrhage from uterine cancer, and flooding.

---

*Mono-bromate of Camphor in Delirium Tremens, and in Chordee.*—Dr. Allan McLane Hamilton relates (*New York Med. Journal*, July, 1872) a case of delirium tremens successfully treated by mono-bromate of camphor. He gave it in doses of five grains made into a pill with conserve of roses. A single dose caused sleep in half an hour. No bad effects followed even when ten grains were taken.

Dr. H. says he has also tried the same article in chordee, and is convinced that it excels any combination of camphor and opium, or any of the usual remedies.

*Amputation at the Knee-Joint.*—Dr. HENRY GIBBONS, Jr., records (*Pacific Med. and Surg. Journ.*, Sept. 1872) an interesting case of this. The subject was a female, æt. 46, "suffering from tuberculosis of the left ankle-joint." Dr. G. amputated the leg at the lower part of the middle third. The whole disease, it was found, was not removed by this operation, but the condition of the patient would not allow at that time of amputation higher up. The stump became swollen, inflamed, and painful, and two openings formed, leading to large sinuses. Various methods were tried to induce healing, without success. After a time the patient's health greatly improved, and Dr. G. amputated at the knee-joint. "A long anterior skin-flap—the incision extending at least two inches below the tuberosity of the tibia—was dissected up; the ligamentum patellæ was then divided; next the ligaments of the joint were severed; and finally the knife was extended directly downward through the tissues, making no posterior flap. Three ligatures were applied to the popliteal and to two small branches. The edges of the flaps were retained in apposition by seven or eight silver wire sutures, supplemented by adhesive straps, and the stump was enveloped in patent lint and bandages, and was subsequently dressed with wet picked lint covered with oiled silk.

"Examination of the excised part corroborated the diagnosis of its condition. The deep sinus between the bones extended nearly to the head of the tibia, and was, like the cavities about the end of the stump, filled with jelly-like matter. The bones were not necrosed, their cut extremities being well rounded, but their structure was very light and spongy, and full of oily matter, as in the case of the bones of the foot.

"The subsequent progress of the case was everything that could be desired. Shock was speedily recovered from; indeed, it existed to so small an extent as not to be worth considering. In a day or two the appetite became good; sleep, at first insured by morphia, soon came naturally, the spirits were buoyant, and all the bodily functions satisfactorily performed For some days the watery discharge was profuse, no doubt from the articular surfaces; this gradually ceased; primary union took place throughout nearly the entire wound, and in three weeks there were but three small surfaces still unhealed. In two weeks the patient was sitting up in a chair, and one ligature had come away; in three weeks she was about on crutches. Two of the ligatures, including that upon the popliteal, remained firmly fixed for three weeks. Being convinced that they were no longer attached to the arteries, and seeing that they interfered with the healing process, I removed them by force and at the expense of considerable pain."

The patient made a satisfactory recovery, and Dr. G. states: "No one could desire a better stump than this operation made. The patellæ fitted in nicely between the condyles, and made a finely rounded end, in no wise intolerant of pressure, while the cicatrix, being on the posterior surface, and from two to three inches above the extremity, was entirely removed from the effects of chafing or pressure."

*Dislocation of the Humerus into the Axilla.*—Dr. E. P. BENNETT, of Danbury, Connecticut, describes (*Medical Record*, March 13, 1872) a method of reducing this dislocation which he claims as original. This claim cannot for a moment be sustained. It was devised more than three-quarters of a century ago, as we long since showed (see No. of this *Journal* for February, 1837, p. 387), by the patriarch of American surgery, Professor Physick, and put in practice by him in 1790. It was subsequently regularly taught in his lectures when Professor of Surgery in the University of Pennsylvania, and is fully described in the *Elements of Surgery*, by his nephew, Dr. J. S. Dorsey; it has been for more than half a century a recognized method in this city, and is noticed in Hamilton's exhaustive *Treatise on Fractures and Dislocations* (4th edition, p. 553).

*Rupture of the Urinary Bladder.*—Dr. Erskine Mason, Adj. Prof. Surg. Univ. New York, reports (*New York Med. Journal*, Aug. 1872) a case of this very serious and rare accident successfully treated by him. The subject of it was a man æt. 26, admitted into Roosevelt Hospital, who after a fall complained of inability to urinate with urgent desire to do so. A careful examination of the patient satisfied Dr. M. that there was a rupture of the urinary bladder, and he laid open that organ through the perinæum, as in the lateral operation for stone, and thus gave exit to the urine. The patient was discharged well on the thirty-ninth day after the accident and the thirty-seventh after the operation.

Dr. M. makes some very instructive remarks on this injury and refers to the admirable papers in regard to it (*New York Med. Journal*, May, 1851), by Dr. Stephen Smith, who gives a table of seventy-eight cases, only five of which are reported as cured.

Dr. M. further discusses the various methods of operative interference which have been proposed, and strongly advocates the one he adopted. He claims for Dr. Wm. J. Walker, of Boston, the credit of first putting into practice, and he believes of originating, this mode of treatment. This surgeon treated successfully, in 1843, by this method, a case of rupture of urinary bladder. See *Communications of the Massachusetts Medical Society*, vol. vii. p. xvii., May 29, 1845.

*Ovariotomy Operations.*—Dr. J. E. Owens records (*Chicago Med. Journal*, Sept. 1872) the case of a woman, æt. 28, upon whom he performed ovariotomy on the 2d August, 1872. Upon opening the abdomen, the tumour was found to be quite movable, there being but few adhesions about its upper part. The difficulties of removal were, however, very great, on account of the existence of intimate and strong adhesion about the pedicle and base of the cysts. A small cancerous growth was found growing from the posterior wall of the body of the uterus. These adhesions being, for the most part, confined to the base, permitted a tolerably free movement of the tumour. The clamp used in this case was Green's modification of an instrument, devised by Hill, of Augusta, Maine, for the removal of intra-uterine polypi.

Vomiting of a more or less acid, greenish fluid began soon after and continued until the patient's death, despite various remedies. On the 5th August, the wound except at its lower extremity had well closed by adhesive inflammation. August 8. Discharge from the abdomen began to grow offensive. From this date to within a day or two of her death, the cavity of the abdomen was washed out with carbolic acid water (strength 1 to 100 at first, and finally 1 to 80 of the temperature of the body), from one to three times daily, using at each washing from forty to one hundred and twenty ounces. August 13. The discharge, having been very profuse for some days, assumed at this date the character of feces. August 18. The discharge saturated not only the body clothing, but the bed and bedclothes. With the hope of lessening the discharge of fecal matter from the wound, a warm water enema was ordered. The greater part of the injection passed through the abdominal opening. August 20. Died at 1 o'clock P.M. The pulse reached 132, and never fell below 120. Cause of death stated to be exhaustion from peritonitis and perforation of small intestine, the result of inflammatory softening.

Another case of ovariotomy performed by Dr. Hunter McGuire, on a woman æt. 62, is recorded in the *Virginia Clinical Record* (July, 1872). The operation was performed July 1, 1871. "On reaching the cavity of the abdomen the tumour was found to be bound down by extensive adhesions, vascular and so firm as to require division by the scissors. The walls of the cysts were so thin and delicate that they were all ruptured in the efforts made to break up the adhesions, and about four gallons of dark, coffee-coloured, albuminous fluid were discharged.

"The solid portion of the tumour was then with some difficulty removed, through an incision six inches in length; in character it was cystoid cancer, and weighed 3½ pounds. A large portion of the wall of one cyst was obliged to be left in the abdomen, because of its firm attachment. The pedicle was very short, the size of a man's wrist, and closely attached to the uterus. From its size the clamp could not be applied, and it was secured by ligature. The left ovary was slightly enlarged, but otherwise healthy.

"The abdomen was cleansed from all blood, and the wound closed by five silver wire sutures. The operation lasted one hour and three-quarters, and about ℥x of blood were lost. The patient was placed in bed and stimulants administered, but she never reacted from the shock of the operation, and died collapsed at 6 A.M., July 2, sixteen hours after its completion."

Prof. T. GAILLARD THOMAS records (*Am. Practitioner*, July, 1872) three cases of double ovariotomy, all successful.

Dr. GEO. HOLMES BIXBY records (*Journ. Gynæcological Society*, Boston) a successful case.

*Reduction of an Inverted Uterus of Twenty-two Years' Standing.*—The *Buffalo Medical Journal* (Aug. 1872) contains the report of a case of complete inversion of the uterus of twenty-two years' standing successfully reduced by Prof. JAMES P. WHITE, by the method described by him in the No. of this Journal for April last, p. 391 *et seq.*

*Artificial Food for Young Infants.*—Dr. CHARLES P. PUTNAM has recently been investigating this subject, and in the *Boston Med. and Surg. Journal* (Aug. 1, 1872) gives as his conclusions that the only proper food for a new-born baby is the milk of its mother; that her place is best supplied by a wet-nurse; that the great obstacle to the use of cow's milk is not the insolubility, but the irritating character of its coagula; that this may be avoided to some extent in many ways, among others by the addition of a little starch and gelatine[1] for the purpose of effecting a mechanical separation of the particles of coagula; and, finally, that for any other purpose starch and gelatine are never to be used.

*Chloral Hydrate in Pertussis.*—Dr. P. B. PORTER, Physician to the New York Dispensary for Sick Children, relates (*New York Medical Journal*, August 1872) several cases of pertussis treated by chloral hydrate, and says that from his experience he is "fully convinced of the marked effect of chloral hydrate in alleviating the symptoms of pertussis, and that there seems to be some evidence (though my number of cases is certainly very limited) to show that it has a positive effect in cutting short the disorder. It is the only remedy I have employed in this affection at the Children's Dispensary for some time." He further states that in not a single case, so far as could be ascertained, was the remedy exhibited without its being followed by an alleviation of the symptoms, and in no case has any injurious effect been produced by it.

*Blindness and Deafness in Consequence of Epidemic Cerebro-Spinal Meningitis.*—Dr. H. KNAPP states (*Medical Record*, Aug. 15, 1872) that "during the last three months and a half there have come under my care forty-one cases of blindness or deafness, the consequence of cerebro-spinal meningitis, which has for more than six months assumed an epidemic character in this part of the country. Among the forty-one patients thirty-one were deaf on both sides, eight were blind with one eye, mostly the left, one was blind with both eyes, and one was deaf on both sides and blind on one. In all cases the diagnosis of cerebro-spinal meningitis could be well established. The symptoms were: mostly a sudden attack of headache, increase of temperature, vomiting, convulsions, with predominant opisthotonos, unconsciousness, delirium, constipation, great debility after the acute symptoms, staggering gait with a tendency to fall sideways, lasting for weeks and months after the recovery. Among the complications I may mention inflammation of the joints in some cases.

"The affection of *the eye* begins usually in the first weeks of the general disease with the following symptoms: circumcorneal injection, discolored iris, ragged pupil, fundus oculi dull, its details not recognizable, or the fundus yielding only a sombre red colour, or appears black. Hypopyon and yellowish exudation plugging the pupil are not infrequent. The cornea in some rare cases becomes ulcerous; in others, the conjunctiva and lids are œdematous and very red, the eyeball protrudes, and exceptionally bursts, suppurates, and shrinks. Ordinarily, the injection of the conjunctiva subsides, the cornea clears up, the hypopyon and exudation in the pupil disappear, and the eyeball assumes a strikingly peculiar and characteristic appearance, which I have only seen in cerebro-spinal meningitis, puerperal fever, and very seldom in typhoid and typhus fevers. The iris is dull and bulges forward like a cone, its periphery, however, is usually drawn backward. The pupil is rather narrow, ragged, and immovable. Through the transparent lens, which has advanced with the iris, a dull white surface is visible in the vitreous chamber. The eyeball is commonly softer and smaller than natural. Sight is completely and irrevocably lost. Later, the crystalline becomes cataractous. The eyeball will remain smaller and softer, squint outward, but never give rise to other inflammations, or sympathetic affection of the other eye. I supply these facts from my observations of the epidemic of cerebro-spinal meningitis which reigned in the upper valley of the Rhine eight years ago. This eye-affection has been mistaken for medullary cancer (glioma) of the retina, but may be distinguished from it by its acute development in combination with the general disease, the peculiar protrusion of the centre of the iris and its retraction at the periphery, the dull white reflex from behind the pupil, and the diminution of size and tension of the globe.

---

[1] As recommended by Meigs and Pepper. "Diseases of Children," p. 304.

"The nature of the eye-affection is purulent choroiditis, probably metastatic. There have been other changes of the eye observed in cerebro-spinal meningitis, principally hyperæmia and inflammation in and around the optic disk; they are rare and not specifically dependent upon this form of meningitis, but on hyperæmia, exudation, and proliferation in the cranial cavity in general.

"The *ear-affection* in cerebro-spinal meningitis does not show symptoms so peculiar as the eye-affection. In the early stage hyperæmia of the middle ear is commonly present, the drumheads being dull, yellowish, the region of the handle and upper portion red, and the light spot faint, smaller, or absent. The pharynx is generally red. The tympanum is inflatable, with a rough blowing sound, after which the appearance of the membrana tympani is not essentially changed. In very rare cases only the affection rises beyond this condition of a mild catarrhal otitis media, developing into purulent inflammation of the drum, with perforation of the drumhead and otorrhœa, which ceases in one or several weeks. These symptoms on the part of the middle ear are, however, of subordinate significance when compared with those furnished by the *inner ear*. In some cases patients at first find sounds around them—for instance, the song of a canary-bird—intolerably harsh, but very soon the hearing-power will diminish, and in nearly all cases be totally and permanently destroyed. When the patients retain their consciousness impairment of hearing may be noticed as early as the second day of the disease, increasing day by day to total deafness in a week or two. In the majority of cases the deafness is only discovered when the patient awakes from his stupor; and may then be total or partial, increasing, in the latter instance, to total deafness very soon. I find, however, in my notes some cases in which hearing was still present some weeks after the disappearance of the severe symptoms of the acute disease, and was lost during the recovery. In all cases the deafness was bilateral, and, with two exceptions of faint perception of sound, complete. Among the twenty-nine cases of total deafness there was only one who seemed to give some evidence of hearing afterward. The treatment consisted in leeches behind and before the ear, blisters, tincture of iodine, ung. tart. stibiat. behind the ears, and the use of the galvanic current. I have seen no good results from this treatment, nor have I heard of a better one to substitute it. * * * The nature of the ear-disease is in all probability a purulent inflammation of the labyrinth, by which the membranes of the inner ear are destroyed in a similar way as the membranes of the eye by the purulent choroiditis. Heller and Lucae have corroborated this by three post-mortem examinations. No disease of the middle ear could annihilate the hearing so completely that no sounds whatever, not even a tuning-fork vibrating on the cranial bones, is perceived."

*Lyell's Displacement of the Radius.*—Prof. P. S. CONNER records (*Clinic*, April 20th, 1872) the two following cases of this:—

"Case 1. F. N., æt. 2 years. Some hours before hurt by nurse swinging her by the hands; afterwards very fretful, complaining of pain when left arm was touched. When seen the left forearm was partially flexed on arm, the hand about three-fourths fully pronated, the motions of shoulder elbow and wrist unimpared and painless, the slightest attempt at supination caused pain (though gentle motion showed that the head of the radius moved with the shaft), no tenderness on pressure upon any part of the forearm and hand except over the upper sixth of radius. Not being able to determine the nature of the injury, but from the tenderness suspecting incomplete fracture somewhere in the upper fourth of the radius, I put the forearm in a state of complete supination and secured it by adhesive straps to a dorsal splint. The child very quickly became quiet and was sent to her home a short distance in the country. On the fourth day afterwards (as I learned from the physician in charge), upon taking off the splint it was found that the difficulty, whatever it had been, had entirely disappeared, all motions of forearm and hand being painless and complete. Further treatment was consequently discontinued. A few days afterwards I saw a paper by Dr. Lyell, originally published in the *Glasgow Quarterly Journal*, calling attention to a "curious displacement of the radius," previously undescribed by surgical writers, so far as known occurring only in children under five years of age, generally in girls, apt to be frequently reproduced. The described symptoms of this displacement agreed so well with those observed in the case above mentioned, that I was satisfied of the nature of the latter. Fortunately for my patient I had adopted the very treatment recommended by Lyell, viz., forced supination, though the application of the splint was an unnecessary annoyance to the child.

"Case 2. S. B., æt. 2½ years, hurt her right arm in some way unknown. Symptoms identical with those of Case 1, given. Recognizing now the nature of the accident, I supinated the forearm, making at the same time slight pressure over the head of the radius. All pain and deformity were at once relieved, the child began laughing and playing around the room. Up to the present writing there has been no recurrence of the displacement.

"'*Lyell's displacement*' (as I think in justice to the describer the injury should be denominated) is not to my knowledge referred to in any surgical work. I have never seen but the two cases mentioned, yet these cases were met with within three weeks of each other. The relief is easy and immediate when the character of the injury is recognized. Of the exact nature of the injury I have been unable to satisfy myself. Very probably Lyell is correct in his belief that 'the radius somehow catches on the adjacent ulna and is there retained,' whether or not from *over-supination*, as he thinks, is perhaps questionable."

---

*Syphilis treated by Syphilization.*—Dr. J. C. HUTCHISON, of Brooklyn, reported to the New York Academy of Medicine (June 6th, 1872) three cases of this. "The progress of the treatment," he says, "was carefully observed by myself as well as by many other gentlemen who were interested in the question. The disease had resisted all the usual remedies, and, as the patients steadily grew worse, they promptly consented to have syphilization practised. Their co-operation was thorough and complete, and they soon manifested the greatest interest in having the inoculations regularly performed."

The three cases reported, Dr. H. states, had gone on "from bad to worse under the various treatments which had been adopted, and were regarded as utterly hopeless when Prof. Boeck began the inoculations. Dr. M. H. Henry, editor of the *American Journal of Syphilography and Dermatology*, who visited the patients with Prof. Boeck, declared that they were the most unpromising cases he ever beheld. The experience afforded by three cases of tertiary syphilis treated by inoculation is insufficient to justify us in determining the value of syphilization as a remedy for syphilis; a much longer experience would be necessary for this purpose. It is sufficient, however, to induce me to question the justness of the inexorable rule laid down by Messrs. Lane and Gascoyne, of the London Lock Hospital, and indorsed by one of our highest American authorities, Prof. Bumstead, who observed the effects of syphilization in three cases at the New York Hospital (*Am. Jour. Med. Sciences*), 'that syphilization is not a treatment which can be recommended for adoption.' In such chronic cases as are here reported, which fail to yield to more ordinary treatment, syphilization is surely a treatment which *can* be recommended, and I feel that I would have been justly censurable had I omitted to avail myself of the advice of so experienced and conscientious an observer as Prof. Boeck has proven himself to be both here and abroad.

"It cannot be expected from the limited experience herein detailed that I shall indorse all the positions of the advocates of syphilization, but I feel that I shall be warranted in proffering this plan of treatment, novel and unpopular though it be, to such patients as shall persistently defy, and grow worse under the plans that are now authorized and accepted; and that such cases do occur, I presume no student of syphilis will deny.

"Dr. A. C. Post believed the theory of syphilization, or the introduction of the syphilitic poison into the patient until he is no longer susceptible to it, a false one. If the theory be correct, the chancroidal inoculation would be the proper one. It was supposed by some, that the establishment of a large number of pustules in different parts of the body tended to facilitate the elimination of the poison from the body and to cure the disease.

"Dr. Isaac E. Taylor stated that syphilization had been tried in Charity Hospital before Dr. Boeck came to this country, and after his arrival syphilization was tried on from eighty to ninety cases, but without success; some of the cases were afterwards cured with mercurials.

"At Bellevue Hospital syphilization was adopted in the case of a woman, but unsuccessfully; mercurials were used subsequently with success. No good result had followed syphilization in Charity Hospital at the time Dr. Boeck left this country, and he confesses that he was not favourably impressed with this plan of treatment, consequently he had not resorted to it."—*Med. Record*, July 15th, 1872.

---

*Treatment of Strictures of the Urethra by Laminaria Digitata and Galvanism.*—Dr. Robert Newman read before the Medical Journal Association of New York a paper on this subject. To insure success by this mode of treatment he gives the following rules in the use of laminaria bougies:—

1. The bougie must be made from an unblemished piece of the plant, taken out of the middle, made with care and equal in its whole length and size. If there is the slightest suspicion of unevenness it should not be used.

2. That part of the bougie which will occupy the portion of the urethra below the last stricture, and particularly *that* part of the bougie which enters the bladder, must be varnished previously. Mastic varnish can be used. If the varnish is applied just before using, the laminaria may dilate a little, but if several coats are applied and allowed to dry, no expansion can take place.

3. As any oily substance hinders the expansion, no oil must be used. The bougie before introduction must be placed in cold water, until it gets a soft, velvet-like touch.

4. The bladder must be emptied before the operation, to avoid uneasiness and overdistension.

5. The urethra ought to be injected with water, to relax the parts and favour the moisture for rapid dilatation.

6. The measure of the urethra and seat of strictures must be carefully taken, notes made, and the bougie prepared accordingly.

7. The bougie, when ready, must be introduced at once, straight, without hesitation, twisting, or resting in its passage; otherwise it will cause pain, or, as dilatation goes on immediately, it will not reach the desired depth.

8. After insertion, the bougie must be left alone, and not meddled with, or tried to move.

9. It must be left inside undisturbed for two to four hours, according to circumstances, consulting the feelings of the patient.

10. The patient during this time is left in a recumbent position, and attended or observed by the surgeon.

11. In removing the bougie, the surgeon takes hold of the bougie, and uses firmly and gradually tractions in the same direction.

If some surgeons have failed with laminaria, they either have not observed these precautions, or they have had imperfect bougies, or selected impracticable cases.

This treatment is most indicated when the stricture is very small, almost impermeable, and no time can be lost, as the No. 1 bougie of laminaria can be introduced easier than the usual sounds or catheters. In a few hours the patient is relieved, and can micturate without difficulty. No bad results can follow, nor will it interfere with his attention to business. This latter advantage is a great consideration, as the treatment with divulsors or dilators almost always causes pain, sufferings, and detention in bed and from business. As soon as the stricture is dilated so far that a steel sound of a larger calibre can be introduced, the laminaria has done its duty, and it is better to abandon its further use, and continue with other means. These are either steel sounds or galvanism.

With regard to the employment of galvanism he states "from authorities on this subject, that Mallez and Tripier deserve the credit for having revived, if not originated, the treatment of strictures by galvanism methodically with improved instruments and appliances.

"The success in curing a stricture by the galvanic battery depends mainly upon the chemical effect of absorption of the altered tissues forming the stricture. Alkalies go to the negative; acids to the positive pole. Consequently we use the negative pole to produce the effect of absorption, which will act as a caustic alkali, and not produce any cicatrix.

"To regulate the strength of the battery to the strength of the patient is an important point in electro-therapeutics. In all drugs we have an established dose, which we again regulate according to circumstances and the individuality of the patient. Should electricity be given at random? The regular dose in the shape of the strength of the current ought to be ascertained, otherwise the intended remedial effect may be detrimental. Now the question arises, what instrument will best fulfil our purpose? In most of my experiments I have used a Stoehrer's sixteen-cell galvanic battery; but in the use of this very convenient apparatus I have met with some difficulties, which it was impossible to overcome without very complicated auxiliary instruments. This battery permits grades only by two (2) cells, which, increasing or diminishing, is too great a difference, and the intensity of the galvanic current, thus altered, is too sudden, causing in the patient a nervous irritation, shock, and pain.

"The size of the elements in Stoehrer's battery is far too large, and the quantity of electricity thereby generated is too powerful to produce the proper effect; consequently the destruction of tissue is too great. This, again, will cause pain, which patients refuse to endure.

"A large surface of battery will cauterize with more intensity than any other known caustic. By using the necessary amount of electrical current thus generated, to enlarge the sphere of action, too much inflammation of the surrounding healthy tissues may supervene, and thus aggravate the disease. No action should ever destroy healthy tissues, the only effort to be made is to restore the morbid parts to their proper normal condition of health; therefore the concentration of the electrical current should be strictly confined to the diseased locality only."

From the author's experience he has discovered that the following rules ought to be observed in its application:—

1. Before the operation, the susceptibility to electricity of the patient should first be ascertained, and the strength of the battery arranged accordingly.
2. The current should never be made so strong as to cause pain, or prolonged too long, but proportioned to the strength of the patient.
3. The poles must be placed first, and then the current introduced. Shocks and interruption of current should be avoided.
4. Repetitions of the operation must be done at intervals of *at least* fourteen days, or, better, four weeks.
5. Mild currents, continued and repeated, work better than strong currents, which, if given only through the metal, cause pain, and may destroy tissues, without curing the strictures.

# INDEX.

A.

Abroma Augustum in dysmenorrhœa, 535
Ackerman, action of digitaline, 246
Acton, treatment of syphilis, 542
Ady. pin retained in throat, 575
Ægophony, 489
Alcohol, antipyretic action of, 250
Althaus, neuritis of brachial plexus, 194
Amaurosis, strychnia in traumatic, 273
Amazon, medical notes on Upper, 395
Amenorrhœa relieved by morphia and atropia, 288
Amory, Action of Bromides, review of, 470
Aneurism, intracranial, 373
——, surgical treatment of, 536
Anomalies, anatomical, 131
Antimony, action of, 247
Anus, forced dilatation for fissure of, 267
Aphasia, 184, 489
Arnott, therapeutics of cancer, 492
Arsenic in green colors, 153
Aspiration as a means of diagnosis and treatment, 551
Asthma, crystals in sputum in bronchial, 529
——, treatment of, 365
Atlas, comminuted fracture of, 554
Atlee, operation for peritoneal inflammatory cyst, 383
——, ovariotomy, 127
Atropia and physostigma, antagonism between, 500
Autumnal Catarrh, notice of Wyman on, 477
Aveling, post-mortem parturition, 565

B.

Bader, ophthalmoscopic appearances of the eye, 183
Barnes, hypertrophic polypus of os uteri, 490
Bartholow, intracranial aneurisms, 373
Bartlett, case of healing by skin grafting, 573
Beard and Rockwell on Electricity, review of, 135
Beck, chloral in tetanus, 292
Begbie, muriate of lime, 524
Belladonna, influence of, on sweating, 527
Bibliographical Notices—
—— Buck, Lithotomy and Lithotrity, 237
—— Carroll. Quarantine, 242
—— Dobell, Winter Cough, etc., 516
—— Dunglison's History of Medicine, 498
Bibliographical Notices—
—— Fisher, Plain Talk about Insanity, 232
——, Fraser, Antagonism between Physostigma and Atropia, 500
—— Green, Introduction to Pathology, 238
—— Guy's Hospital Reports, 181
—— Harley on the Urine, 238
—— Henry, Treatment of Venereal Diseases, 240
—— Hewson, Earth Dressing in Surgery, 226
—— Lanoix, Vaccinal Syphilis, 241
—— Lawson, Sciatica, Lumbago, and Brachialgia, 506
—— Löwenberg, Extraction of Foreign Bodies from Ear, 514
—— MacCormac, Consumption and the Breath Rebreathed, 517
—— Meadows, Midwifery, 507
—— Medico-Chirurgical Transactions, 191
—— Mitchell, Injuries of Nerves, 229
—— Morgan, Origin of Cancer, 511
—— ——, The Contagious Diseases, 239
—— New York State Medical Society's Transactions, 495
—— Obstetrical Transactions, 202
—— Report of Board of Health of Health Department of City of New York, 218
—— Smith, Diseases of Children, 235
—— St. Thomas's Hospital Reports, 485
—— State Medical Society's Transactions, 43
—— Storer, Two Frequent Causes of Uterine Disease, 500
—— Syphilis, recent works on, 503
—— Watson's Practice of Medicine, 512
—— Wood, Thermic Fever, 482
—— Wyman, Autumnal Catarrh, 477
Bill, carbol, 17
Binz, antipyretic action of quinia and alcohol, 250
Blacke, lacto-phosphate of lime, 249
Bladder, inversion of, 493
——, irritable in latter months of pregnancy, 203
——, rupture of urinary, 579
Blindness from cerebro-spinal meningitis, 508
Blood, contribution to pathology of, 277
Bokai, adhesion of prepuce, 264

Bone, bending of, 288
———, removal of tumours from, 200
Bony metamorphosis, general, 534
Bordley, oxytocic action of cinchona, 73
Bowditch, intemperance, 152
Brain, injury to, 198
Bromide of potassium, relative efficacy of. in maniacal excitement, 261
—————————, review on action of, 470
—————————, properties of, 526
————————— in epilepsy, 531
Brown, abnormal genitals, 575
———, oxytocic action of quinia, 287
———, pelvic peritonitis and peri-uterine cellulitis, 56
Buck on Lithotomy and Lithotrity, notice of, 237
Busey, chloroform poisoning, 430

C.

Cæsarean operations in United States, 290
——— section, case of, 205
Caffein, 528
Calculus, extraction of fragments of urinary, 270
California Medical Society's Transactions, notice of, 217
Callender, cases of injury to brain, 198
Camphor, mono-bromate of, in delirium tremens and chordee, 577
——— monobromide of, 292
Cancer originating in eye lost by inflammation, 558
———, therapeutical importance of recent views of, 492
Cantharidism, reno-vesical, 264
Carbol, Bill on, 17
Carbolic acid as an anæsthetic, 289
—————, properties of, 248
Carbon as an antidote to phosphorus, 571
Carbuncle, treated by incision, 124
Carroll, Quarantine, notice of, 242
Cataract, Liebreich's operation for, 493
Catheter, vertebrated prostatic, 433
Cellulitis, peri-uterine, 56
Cephalotribe, construction of, 209
Cerebro-spinal meningitis, 576
——————————, blindness and deafness from, 580
Chapman, pericarditis, 313
Chisolm, accidental irideremia, 125
————, hypodermic use of strychnia, 386
Chloral, action of, 245, 522
———, death from, 572
———, diplopia following use of, 573
——— in pertussis, 580
——— in tetanus, 292
———, relative efficacy of, in maniacal excitement, 261
———, strychnia an antidote to, 571
Chloroform poisoning, 430
Churchill's report of obstetrical practice, 565
Cinchona, oxytocic action of, 73
Clarke, Action of Bromides, review of, 470
———, alcoholic paresis and paraplegia, 258
Conner, Lyell's displacement of radius, 582
Cornea, tinting opacities of, 561
Corpuscles, variation in size of red, 243
Corwin, spinal contusion with fracture of femur. 419
Cretinism, sporadic, 195
Croft, inversion of bladder, 493
Cuignet, vision in young infants, 559

D.

Deafness from cerebro-spinal meningitis, 580
Demarquay, aspiration in strangulated hernia, 267
Development, precocious, 245
Dextral pre-eminence, 196
Diabetes insipidus, treatment of, 263
————, treatment of, 532, 533
Diarrhœa of young children, pepsine in, 263
Dieulafoy, aspiration as a means of diagnosis and treatment, 551
Digitaline, action of, on circulation and temperature, 246
Dilators, new use of Barnes', 275
Dobell, Winter Cough, etc., notice of, 516
Draper, arsenic in green colours, 153
Dropsy, treatment of, 260
Duchenne, Localized Electrization, review of, 133
Duncan, delay of labour after discharge of liquor amnii, 562
Dunglison's History of Medicine, notice of, 498
Dysmenorrhœa, abroma augustum in, 535
——————, intermenstrual, 276

E.

Ear, extraction of foreign bodies from, 514, 553
Earth Dressing in Surgery, notice of, 226
Edinburgh Obstetrical Society, notice of transactions of, 209
Eichelberger, bending of bones, 288
Elbow, sub-periosteal resection of 550
Electro-Therapeutics, review on, 135
Elimination theory of cure of disease, 536
Embalming, 182
Embolism, 325
Epilepsy, bromide of potassium in, 531
Epistaxis, method of instantly arresting, 266
————, vicarious menstruation by means of, 566
Ergot, administration of, in diseased hearts, 566
———, in fibroma of uterus, 567
Erickson, oxytocic action of quinia, 287
Ethyl-chloride of mercury, 252
Eucalyptus globulus as an antiperiodic, 251
Evans, paracentesis thoracis, 486
Eye, ophthalmoscopic appearances of, 183
———, strychnia in diseases of, 386

F.

Fagge, electrolytic treatment of hydatids of liver, 192
———, sporadic cretinism, 195
———, stenosis of œsophagus followed by epithelioma, 188
Fayer, badly united fracture, cured by refracture, 268
Femur, impossibility of complete reduction in fracture of, 112
————, unreduced dislocation of, 492
Fisher on Insanity, notice of, 232
Fistula, utero-peritoneal, 275

Fitts, fibrous tumour at base of tongue, 122
Food, artificial, for infants, 580
Fracture, badly united, cured by refracture, 268
Fraser, antagonism between physostigma and atropia, 500
Fungi in blood of healthy men, 244

G.

Galt, medical notes on Upper Amazon, 395
Gastrotomy, 552, 553
———, in fibrous tumours of uterus, 568
Genitals, abnormal, 575
Gestation, extra-uterine, 208
Gibbons, amputation at knee-joint, 578
Goitre, treatment of, 266
Grace, case of injury to spine, 555
Green's introduction to Pathology, notice of, 238
Gross's Surgery, review of, 439
Guerin, cotton-wadding dressing for wounds, 271
Gunshot wounds of lower extremity, 491
———, diagnosis of presence of metallic substance in, 557
Guy's Hospital Reports, notice of, 181
———, analysis of patients treated in, 191

H.

Habershon, clinical cases, 189
Hæmatidrosis, 186
Hæmatocele, pelvic, 205
Hæmaturia, 193
Hamilton, fracture of atlas, 554
———, general bony metamorphosis, 534
Hammond, monobromide of camphor, 292
Harlan, congenital retinitis pigmentosa, 130
Harley, action of opium alkaloids, 487
———, endermic hæmaturia, 193
——— on the Urine, notice of, 238
Harris, quinia as an oxytocic, 290
———, Cæsarean operations in the United States, 290
———, cancer of stomach, 423
Hay fever, 477
Hemorrhage, pulmonary, and phthisis, 528
Henry, Treatment of Venereal Diseases, notice of, 240
Hernia, aspiration in strangulated, 267, 551
Herpes zoster, pathology of, 257
Hewitt, vomiting of pregnancy, 206
Hewson on Earth Dressing, notice of, 226
Hicks, contractions of uterus throughout pregnancy, 206
Hildebrandt, ergot in fibroma of uterus, 567
Holden, treatment of asthma, 365
Hospital atmosphere, 569
Hospitalism, review on, 162
Humerus, dislocation of, into axilla, 578
Hutchinson, vaccinal syphilis, 197
Hutchison, syphilization, 582
Hydatids of liver, electrolytic treatment of, 192
Hydrocele, treatment of, 266
Hyoscyamus, relative efficacy of, in maniacal excitement, 261
Hysteria, 185

I.

Icthyosis treated by sulphate of copper, 535
Insanity, notice of Fisher on, 232
Intemperance, Bowditch on, 152
Intestinal canal, erectile tumour of, 534
Iowa Medical Society, notice of transactions of, 213
Irideremia, accidental, 125
Iritis, rheumatic and gouty, 559
Iron, researches on, 524

J.

Joints, surgical treatment of diseased, 495
Jones, diseased joints, 495

K.

Keeler, eucalyptus globulus, 251
Kennedy, Hospital atmosphere, 569
———, portion of placenta thrown off in pregnancy, 563
Knapp, blindness and deafness from cerebro-spinal meningitis, 580
Knee-joint, amputation at, 578
Knight, cases of ovariotomy, 434

L.

Labbe, aspiration in strangulated inguinal hernia, 551
———, carbolic acid, 248
Labour, delay of, after discharge of liquor amnii, 562
Lactic acid in treatment of diabetes, 532
Lacto-phosphate of lime, therapeutic dose of, 249
Lanoix, Vaccinal Syphilis, notice of, 241
Lawson, Sciatica, etc., notice of, 506
Lee, cases of ovariotomy, 436
Leeds, amenorrhœa relieved by morphia and atropia, 288
Leucocythæmia with alteration of marrow of bones, 259
Licorice, compound powder of, a laxative, 252
Lidell, thrombosis and embolism, 325
Liebreich, operation for cataract, 493
Lithotomy, 548
——— and Lithotrity, notice of Buck on, 237
Longmore, tabulation of war surgery, 199
Lostorfer, fungi in blood in health, 244
———, Stricker's investigations on corpuscles of, 277
Lowenberg, extraction of foreign bodies from ear, 514
Lyell's displacement of radius, 582

M.

MacCormac on Consumption, notice of, 517
———, gunshot wound of lower extremity, 491
———, unreduced dislocation of femur, 492
Manderille, diplopia following use of chloral, 573
Mania, puerperal, 209
Markoe, Diseases of the Bones, Review of, 448
Mason, rupture of bladder, 579
Massachusetts State Board of Health, review of report of, 151
Mastoid cells, inflammation of, 269

Maxilla, bilateral anchylosis of inferior, 269
Maxillary sinus, disease of, 558
McClellan, extirpation of parotid, 417
McDonnell, Surgery, notice of, 503
McRae, action of chloral, 522
Meadows, Midwifery, notice of, 507
———, pelvic hæmatocele, 205
Medico-Chirurgical Transactions, 191
Melanotic tumours, nature of, 557
Metatarsus, amputation through, 582
Metropolitan Board of Health, notice of report of, 218
Meyer, Medical Electricity, review of, 135
Michigan Medical Society's Transactions, notice of, 218
Milne, version and uterine tetanus, 564
Miner, ovariotomy by enucleation, 391
Miot, extraction of foreign bodies from ear, 453
Mitchell on Injuries of Nerves, notice of, 229
Montgomery, shortening in fracture of thigh, 112
Morgan on the Contagious Diseases, notice of, 239
———, Origin of Cancer, notice of, 511
Morphia, poisoning from, 572
Morris, cerebro-spinal meningitis, 576
———, cleft palate, 494
Murchison, incubation of continued fevers, 485
Muriate of lime, therapeutic action of, 524
Murray, case of triplets, 289
Myrrh, therapeutic value of, 249

N.

Neftel, Galvano-Therapeutics, review of, 135
Nerves, notice of Mitchell on Injuries of, 229
Neumann, leucocythæmia with alteration of marrow of bones, 259
———, scleroderma adultorum, 257
Neuritis of the brachial plexus, 194
Neurotics, action of, on cerebral circulation, 526
Newman, treatment of strictures, 583
New York State Medical Society's Transactions, notice of, 495

O.

Obstetric operations, mortality after, 203
Obstetrical Society of London, notice of transactions of, 202
——————— Edinburgh, notice of transactions of, 269
Œsophagus, stenosis of, followed by epithelioma, 188
———, stricture of, 489
Ogle, dextral pre-eminence, 196
Ollier, subperiosteal resection of elbow, 550
Opium alkaloids, action of, 487
———, use and abuse of, 156
Optic nerves, anæmia of, treated by galvanism, 272
Ord, influence of colloids upon forms of inorganic matter, 485
Organisms, investigations on low, 244, 519
Oser and Schlesinger, uterine movements, 520
Osteo-malacia, 207
Ovarian cyst, spontaneous rupture of, 202
Ovariotomy, cases of, 127, 434, 436, 579
——— by enucleation, 391
——— during pregnancy, 208
———, operation for peritoneal inflammatory cyst, 133
———, Spencer Wells on, 201
Ovary, misplaced, 213

P.

Page, pulvis glycyrrhizæ compositus, as a laxative, 252
Paget, removal of tumours from bone, 200
Palate, cleft, 494
Paracentesis thoracis, 486
Parasites, vegetable, and the diseases they cause, 159
Paresis and paraplegia, alcoholic, 258
Parotid gland, extirpation of, 417
Parturition, post-mortem, 565
———, temperature during, 190
Pathological Histology, review of Rindfleisch on, 172
Peacock, prognosis in valvular disease, 489
Pean, gastrotomy in fibrous tumours of uterus, 568
Pemberton, lithotomy, 548
———, stricture of urethra, 545
———, surgical treatment of aneurism, 536
Pericarditis, experimental researches on, 313
Peritonitis, pelvic, 56
Perivascular system of brain, 488
Phosphates, excretion of, 243
Phosphorus, carbon as an antidote to, 571
Physostigma and atropia, antagonism between, 500
Picrate of quinia, 252
Pin retained in throat, 575
Placenta, portion of, thrown off in pregnancy, 563
———, separation of, before labour, 211
Plaster of Paris dressing for fractures, 75
Plastic apparatus in surgery, 75
Pneumonia, acetate of lead in, 262
Poland, statistics of subclavian aneurism, 181
Pregnancy in cases of disease of heart a cause of pulmonary disease, 274
———, recurrent discharge of fluid from uterus during, 274
Prepuce, adhesion of, to glans, 264
Priestley, intermenstrual dysmenorrhœa, 276
Puerperal convulsions treated by chloroform, 574
Pyæmia, 253

Q.

Quinia, antipyretic action of, 250, 527
———, effects of large doses of, 524
———, oxytocic action of, 287, 290, 437, 438
———, picrate of, 252
———, researches on, 524

R.

Rabuteau, quinia and iron, 524
Radius, Lyell's displacement of, 582
Rainey, currents in fluids, 486
Rectum, stricture of, 114

Relapsing fever, incubation of, 485
Retina, lesions of, in albuminuria, 559
Retinitis pigmentosa, case of congenital, 130
Reviews—
  Clarke and Amory, Action of Bromides, 470
  Electro-Therapeutics, 135
  Gross's Surgery, 439
  Hospitalism, 162
  Markoe, Diseases of the Bones, 448
  Report of State Board of Health of Massachusetts, 151
  Rindfleisch, Pathological Histology, 172
  Schroeder, Manual of Obstetrics, 457
Reynolds on Electricity, review of, 135
Rheumatic gout, treatment of, 533
Ricord, treatment of syphilis, 543
Rindfleisch, investigations on low organisms, 244, 519
———, Pathological Histology, review of, 172
Roberts, treatment of dropsy, 260
Rutledge, oxytocic action of quinia, 438

S.

Sanders, chloroform in puerperal convulsions, 574
Sanderson, pyæmia, 253
Schroeder's Obstetrics, review of, 457
Schwalbe, treatment of goitre, 266
Sciatica, notice of Lawson on, 506
Scleroderma adultorum, 257
Sclerosis of spinal cord, 185
Seeds, action of quinia on uterus, 437
Seguin, cervical sympathetic in unilateral sweating of head, 427
———, double central canal in spinal cord, 429
Sewing-machines, effects on health of, 156
Shortening produced by fracture of femur, 112
Simpson on Hospitalism, review of, 162
Skin-grafting, 182, 493, 573
Smallpox, xylol in, 263
Smith on Diseases of Children, notice of, 235
———, carbolic acid as an anæsthetic, 289
———, galvanism in anæmia of optic nerve, 272
Soda, sulphovinate of, as a purgative, 252
Spinal atrophy after amputation, 268
——— cord, double central canal in, 429
——— contusion with fracture of femur, 419
Spine, remarkable case of injury to, 555
Squire, vertebrated prostatic catheter, 433
Staub, hypodermic injections of corrosive sublimate in syphilis, 545
Sternum, transverse fracture of, 557
St. John, plastic apparatus in surgery, 75
Stomach, cancer of, 423
Storer, two frequent causes of uterine disease, 500
Streets, anatomical anomalies, 131
Stricker, contribution to pathology of blood, 277
Stricture of urethra, 545
Strictures, treatment of, by laminaria and galvanism, 584
St. Thomas's Hospital Reports, notice of, 485
Strychnia an antidote to chloral, 571
Strychnia hypodermically in disease of eye, 386
Subclavian aneurism, statistics of, 181
Sulphovinate of soda as a purgative, 252
Sunstroke, Wood on, 482
Sweating, influence of belladonna on, 527
——— of head, cervical sympathetic in unilateral, 427
Syphilis, cerebral disease caused by, 188
———, Drysdale on, 504
———, Lewin on, 505
———, notice of recent works on, 503
———, treatment of, 542, 543
————————— by corrosive sublimate hypodermically, 545
——— treated by syphilization, 582
———, vaccinal, 197, 241

T.

Taste nerves of, 243
Taylor, tinting opacities of cornea, 561
Temperature of body modified by local applications, 197
Tetanus, treatment of, 550
———, uterine, 564
Thermic fever, Wood on, 482
Thrombosis, 325
Ticehurst, tattooing opacities of cornea, 562
Tobacco smoke, action of, 247
Toe-nail, in-growing, 557
Tongue, fibrous tumour at base of, 122
Tracheotomy performed by galvano-caustic knife, 270
Triplets, case of, 289
Troup, gastrotomy, 552
Tubercular meningitis, 533
Typhoid fever, incubation of, 485
——————, cold water treatment of, 530
Typhus, incubation of, 485

U.

Urea in animal body, 244
Urethra, stricture of, 545
———————, treatment of, by laminaria digitata and galvanism, 583
Uteri, os, hypertrophic polypus of, 490
Uterine movements, characters of, 520
Uterus, contractions of, throughout pregnancy, 206
———, diagnosis of incipient cancer of neck of, 567
———, ergot in fibrous enlargement of, 209, 567
———, gastrotomy in fibrous tumours of, 568
———, reduction of inverted, 580

V.

Vaccine lymph, glycerined, 263
Valvular disease, prognosis in, 489
Varicose veins, ergotine injections for, 270
Variola and typhus fever, 531
———, recurrent, 292
Veratrum viride as a hæmostatic, 577
Version and uterine tetanus, 564
Vertebræ, caries of, and disease of cord, 260
Vision, condition of, in young infants, 559
Vomiting of pregnancy, 204

W.

Wagstaffe, perivascular system of brain, 488
Watson's Practice of Medicine, notice of, 512
White, vegetable parasites, 159
Whitehead, stricture of rectum, 114
———, treatment of carbuncle by incision, 124
Wilks, cases of disease of the nervous system, 184
———, hæmatidrosis, 186
Wood, Thermic Fever, notice of, 482
Wounds, cotton-wadding dressings for, 271
———, on healing of, 267
Wyman, Autumnal Catarrh, notice of, 477

X.

Xylol in smallpox, 263

Z.

Zootrophic powder, 253

# UNIVERSITY OF PENNSYLVANIA.

## MEDICAL DEPARTMENT.

### ONE HUNDRED AND SEVENTH SESSION.

*Ninth Street, above Chestnut, Philadelphia.*

**The Lectures of the Session of 1872–3 will commence on the First Monday (7th) of October, and close on the last day of February ensuing.**

### MEDICAL FACULTY.

| | |
|---|---|
| George B. Wood, M.D., | Emeritus Professor of Theory and Practice of Medicine. |
| Hugh L. Hodge, M.D., | Emeritus Professor of Obstetrics and the Diseases of Women and Children. |
| Henry H. Smith, M.D., | Emeritus Professor of Surgery. |
| Joseph Carson, M.D., | Professor of Materia Medica and Pharmacy. |
| Robert E. Rogers, M.D., | Professor of Chemistry. |
| Joseph Leidy, M.D., | Professor of Anatomy. |
| Francis G. Smith, M.D., | Professor of Institutes of Medicine. |
| R. A. F. Penrose, M.D., | Professor of Obstetrics and the Diseases of Women and Children. |
| Alfred Stillé, M.D., | Professor of Theory and Practice of Medicine, and of Clinical Medicine. |
| D. Hayes Agnew, M.D., | Professor of Surgery. |
| H. Lenox Hodge, M.D., | Demonstrator of Anatomy. |

Clinical Instruction is given daily throughout the year, in the Medical Hall, by the Professors and Clinical Lecturers and at the Hospitals. At the Philadelphia Hospital, and at the Pennsylvania Hospital, the instruction is free.

The Dissecting Rooms, under the superintendence of the Professor of Anatomy and the Demonstrator, are open from the first of September.

The room for Operative Surgery and the Application of Bandages, etc. etc., is open early in September and throughout the Session, under the supervision of the Professor of Surgery.

### SUMMER MEDICAL ASSOCIATION OF THE UNIVERSITY.

| | |
|---|---|
| Practical Chemistry | Prof. Robert E. Rogers, M.D. |
| Physiology | Prof. Francis G. Smith, M.D. |
| The Cell Doctrine | Prof. Joseph Leidy, M.D. |
| Regional Anatomy | H. Lenox Hodge, M.D. |
| Microscopy | James Tyson, M.D. |
| Clinical Surgery | Prof. D. Hayes Agnew, M.D. |
| Morbid Anatomy | Joseph G. Richardson, M.D. |
| Clinical Medicine and Physical Diagnosis | William Pepper, M.D. |
| Diseases of Women and Children | William Goodell, M.D. |
| Surgical Diseases of the Mouth | James E. Garretson, M.D. |
| Diseases of the Eye and Ear | William F. Norris, M.D.<br>Geo. Strawbridge, M.D. |
| Diseases of the Skin | Louis A. Duhring, M.D. |
| Diseases of the Nervous System | Horatio C. Wood, Jr., M.D. |

Lectures on the above subjects are delivered by the members of the Summer Association annually during the months of April, May, and June, September, and the early part of October.

The lectures of this Preliminary Course will this year begin on Monday, September 2, and continue until the opening of the Regular Session. These Lectures are free to all matriculants of the University, upon registering their names with the Secretary of the Association, who will furnish them with tickets.

EXPENSES.—Fees for the Course of Lectures, $140. Matriculating Fee (paid once only), $5. Graduating Fee, $30.

### AUXILIARY FACULTY OF MEDICINE.

HARRISON ALLEN, M.D., Professor of Zoology and Comparative Anatomy.
HORATIO C. WOOD, Jr., M.D., Professor of Botany.
FERDINAND V. HAYDEN, M.D., Professor of Mineralogy and Geology.
HENRY HARTSHORNE, M.D., Professor of Hygiene.
JOHN J. REESE, M.D., Professor of Medical Jurisprudence, including Toxicology.

The 8th Course of the Auxiliary Lectures will begin on the last Monday in March, and terminate the last Thursday in June. These lectures are free to all Students of the regular Medical Course.

R. E. ROGERS, M.D., *Dean of the Medical Faculty*, University Building.

W. H. Salvador, *Janitor*, University Building.

P. S.—Board may be had at from $5 00 to $6 00 per week.

*** *Alumni of this Department who are permanently settled, and other medical practitioners who desire to receive the Catalogue and Announcement regularly, are respectfully requested to send their addresses to the Dean, P. O. Box 2838, Philadelphia.*

## BOYLSTON MEDICAL PRIZE QUESTIONS.

The Boylston Medical Committee, appointed by the President and Fellows of Harvard University, announce that

The following are the questions proposed for 1873:—

1. Electro-Therapeutics.

2. The Value of Chemistry to the Medical Practitioner.

Dissertations on the above subjects must be transmitted, postpaid, to John Jeffries, M.D., Boston, *on or before the first Wednesday in April*, 1873.

The author of a dissertation considered worthy of a prize, on either of the subjects proposed for 1873, will be entitled to a premium of *one hundred and fifty dollars.*

The following are the questions proposed for 1874:—

1. The best Methods of Preventing the Development and Spread of Smallpox.

The author of a dissertation on this subject, considered worthy of a prize, will be entitled to a premium of *two hundred dollars.*

2. The Development and Extension of Malignant Disease.

The author of a dissertation on this subject, considered worthy of a prize, will be entitled to premium of *one hundred and fifty dollars.*

Dissertations on these subjects must be transmitted as above, *on or before the first Wednesday in April*, 1874.

☞ For a more detailed announcement, see Boston Medical and Surgical Journal of June 13, 1872 (David Clapp & Son, Publishers, 334 Washington Street, Boston), or address

662-L

R. M. HODGES, M.D.,
*Secretary of the Committee.*

---

## UNIVERSITY OF LOUISIANA—MEDICAL DEPARTMENT.

### NEW ORLEANS.

### FACULTY.

A. H. Cenas, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children.
James Jones, M.D., Professor of Obstetrics and Diseases of Women and Children.
T. G. Richardson, M.D., Professor of General and Clinical Surgery.
Samuel M. Bemiss, M.D., Professor of the Theory and Practice of Medicine and Clinical Medicine.
Stanford E. Chaillé, M.D., Professor of Physiology and Pathological Anatomy.
Frank Hawthorn, M.D., Professor of Materia Medica and Therapeutics, and Clinical Medicine.
Joseph Jones, M.D., Professor of Chemistry and Clinical Medicine.
Samuel Logan, M.D., Professor of Anatomy and Clinical Surgery.
E. Souchon, M.D., Demonstrator of Anatomy.

The next annual course of instruction in this Department (now in the thirty-eighth year of its existence), will commence on Monday, the 18th day of November, 1872, and terminate on the second Saturday of March, 1873. Preliminary Lectures on Clinical Medicine and Surgery will be delivered in the amphitheatre of the Charity Hospital, beginning on the 18th of October, without any charge to students. The Anatomical Rooms will be opened at the same time. The members of the Faculty are Visiting Physicians and Surgeons to the Charity Hospital, and give instruction daily *at the bedside* of the sick. The hospital received during the past year 6637 patients, and offers unsurpassed advantages for the practical study of medicine and surgery.

*FEES.*—For all the lectures, $140; Matriculation, $5; Practical Anatomy, $10; Graduation, $30. Payment required in advance.

For further information, address

T. G. RICHARDSON, M.D., *Dean.*

BINDING SECT. MAR 4 1966

R
11
A5
n.s.
v.64
cop.2

The American journal of the medical sciences

Biological
& Medical
Serials

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY

STORAGE